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INTRODUCTION

Welcome to many hours of pleasurable work with your new TeeJet 5000 Multi-Implement Computer.

We recommend that you read at least the general information chapters in this manual, before you start using the computer.

Please remove the implement chapters in this manual that you do not require, but don't throw them away, as you will need them again when you expand your TeeJet 5000 system.

We have tried to write this manual as readable as possible using as little "computer talk" as possible.

Please read chapters 1 and 2; sit in the cab with this manual, switch the computer on and "page" your way through the many new possibilities the TeeJet 5000 provides.

Try to learn **only 1 program**: i.e. the program relating to the implement to be used first. As once you have learnt one program, you have learnt them all.

Please don't be confused by the constantly changing pictures and text on the screen, this will soon become second nature for you when operating the TeeJet 5000.

Be selective: avoid using too many functions to start with, i.e. "warnings". These functions can always be selected when, at a later date, you feel more confident with the computer.

A TeeJet 5000 is not just a "TeeJet 5000", but a product that is under constant development.

The computer "version" is displayed on the screen each time the computer is started. Please use this reference should you need to contact your local dealer.

You are always welcome to contact your local dealer with questions or suggestions for the TeeJet 5000 plus the wide range of implement equipment available that is always under development in close co-operation with leading machinery manufacturers.

This manual is written so that many of the functions that are available in all of the programs are described in chapters 1 and 2, e.g. forward speed calibration and the task function.

IMPORTANT

We have endeavoured to deliver a fault free product. To ensure optimal use of the equipment we ask that great attention be paid when reading the manual. Please contact your local dealer if further support is needed. Regarding responsibility for use of the product we refer to our sales and delivery terms especially paragraph 7, which follows:

7. Product usage.

7.1 Any use of the product is at the sole risk of the buyer. The buyer is therefore not entitled to any form for compensation caused by, for example, any of the following:

- Disturbance to/from any electronic services or products that do not confirm to the standards for CE marking,
- Missing or poor signal coverage or a succession hereof from external transmitters/receivers, used by the buyer,
- Functional faults, which apply to or from a PC-program or PC-equipment, not delivered by the seller,
- Faults that may arise from the buyers negligence to react to warnings and fault messages from the product, or which can be traced to negligence and/or absent constant control of the work carried out in comparison to the planned job.

7.2 When implementing any new equipment the buyer must take great care and pay attention. Any doubts as to correct operation/use should result in contacting the sellers service department.

This manual may not be altered, copied or manipulated in any way. Unoriginal manuals can lead to operational faults damaging machines or crops as a consequence thereof. TeeJet Technologies can therefore not be held responsible for damages incurred, which can be traced to the use of unoriginal or manipulated manuals. Original manuals can be requisitioned at any time from TeeJet Technologies.

With regards

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General use

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- RETURN KEY 1.3
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- MEMORY KEY 1.4
- HOLD KEY 1.4
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GENERAL USE

The **TeeJet 5000** has been specifically developed to serve **all** commonly used implements within agriculture; thus all tasks and implements can be operated and controlled by the same monitor via sensors.

The **TeeJet 5000** menu system has, in principal, been built up as a book in which you can page through the different menus. The computer functions are divided into programs. Each program has been “tailored” for the implement in question. The 6 function programs are:

Sprayer

Fertiliser distributor

Drill

Baler

Slurry spreader

Other implements

The functions available for each individual implement are described in each individual chapter. The first two chapters describe the functions available for all implements.

In the **“SYSTEM”** menu all sensors can be tested in **“TEST INPUT”** and the outputs to valves, actuators, etc. in **“TEST OUTPUT”**. This is described in chapter 2.

The "**SYSTEM DATA**" menu has *special encodements* to which the operator has ***no access***.

The required operating language can be selected in **“LANGUAGE”**.

The **TeeJet 5000** standard fitting kit for one tractor includes:

Junction box, trailer plug, wheel sensor, implement sensor, plus all necessary parts for fitting.

This equipment allows **forward speed**, **area**, **driven distance** and **time functions** to be displayed.

The system has been prepared for countless extensions. These will, however, often depend on the tractor and implement type. **TeeJet AGRO** offers specially designed fitting kits for most commonly known makes and models. Ask your dealer or directly to **TeeJet AGRO**.

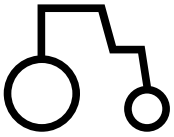
NOTE! Please unfold the page in chapter 11 before proceeding.

CONSTANT KEYS

RETURN KEY

The return key is used for returning to previous displays. It takes one display picture each time the key is pressed. The key is also used for accepting the status screens for encoded values (see **"STATUS SCREEN"**).

TRACTOR INFO KEY



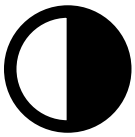
By pressing this key a number of important tractor functions can be displayed **regardless** of which function has been selected.

The tractor info functions are:

FORWARD SPEED
WHEEL SLIP
DIESEL CONSUMPTION PER HOUR
WORK EFFICIENCY
AREA
REMAINING AREA

Press the "**RETURN KEY**" to revert to previous screen.

CONTRAST



Pressing this key allows the screen contrast (dark/light) to be adjusted. This ensures that the information on the screen can be seen under all conditions.

NOTE: extreme heat or cold may cause the screen to appear black or totally blank. Using the CONTRAST key allows for this to be compensated for, but when the TeeJet 5000 reaches normal operating temperature the screen will again become un-readable.

The present contrast is shown at the top of the display.

Normal contrast is 45 - 50.

Contrast + = darker display

Contrast - = brighter display

Pressing the **"C"** key sets the contrast to 50

MEMORY KEY

The memory keys works as a bookmark. Pressing this key stores the currently selected screen. After moving around through the menus simply pressing the memory key again will return the screen to the previously selected screen.

NOTE! The **MEMORY KEY** works only within one implement at a time (e.g. sprayer).

HOLD KEY

This key has different functions depending on the implement selected

Hold key on seed drill

Fill flow menus for sprayers

Start and stop for certain fertiliser distributors

DELETE KEY

The delete key is used together with the numerical keys for encoding. It deletes the selected value. Also used for zeroing the pulse counters in **"TEST INPUT"**.

BACKGROUND LIGHT

This key is used for switching the display light on and off. switching the light on and off can also be done in the **CONTRAST** menu.

NUMERICAL KEYS

The numerical keys are used for encoding.

General functions

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GENERAL FUNCTIONS

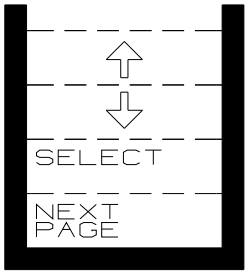
This chapter deals with the functions that can always be chosen no matter which implement is used. The functions related to a certain implement will be dealt with in the chapter on the implement in question.

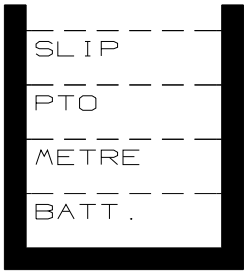
The encoded values, which are conditional on several of the functions, will be dealt with under the respective implements as each implement has specially encoded values.

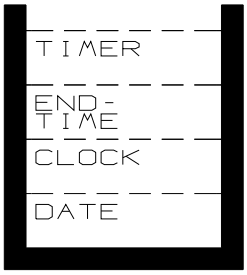
FUNCTION KEYS

Using the **4 FUNCTION KEYS** and the **RETURN KEY** allows you to “page” through all the functions of the computer in a clear and systematic manner.

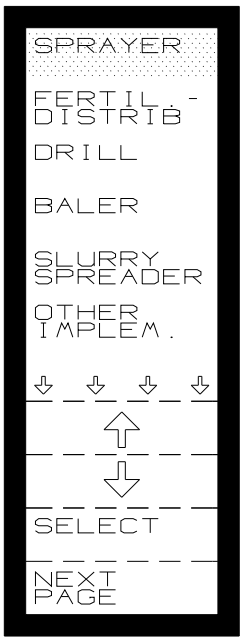
The actual function of each of the 4 function keys is shown on the display to the left of the key. Pressing one of the keys may change all of the keys to a new function (see the examples below).





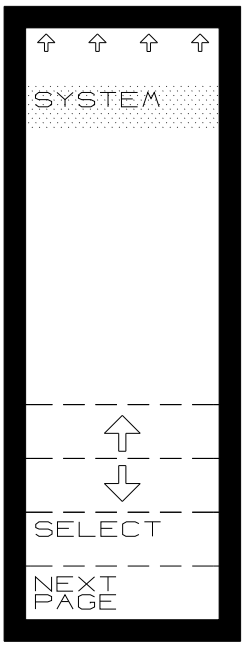


BASIC MENU



The display shown is the first page of the menu system. From this screen the first selection is made, i.e. which of the 6 implement programmes you want to use.

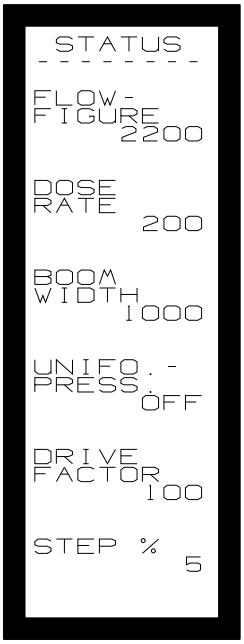
Moving the cursor (the dark area) by using the arrow keys and then pressing the **SELECT** key, selects the required implement



IMPORTANT! IMPORTANT! IMPORTANT!

During operation (driving in the field) with an implement and sensors selected, you **must not** return to the **BASIC MENU** or change to another implement. If this is attempted the **TeeJet 5000** will display "**MENU CHANGE PROHIBITED**". This is necessary to avoid incorrect measurements.

STATUS SCREEN



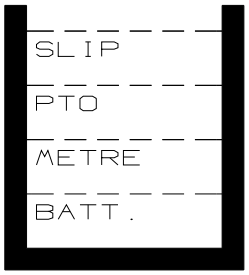
Each time the "**OPERATION MENU**" of an implement is selected or you leave an encode menu the status screen will automatically appear. All the encoded values are displayed. **Check and accept** all the values on the status screen before proceeding by using the "**RETURN KEY**".

NB: Before start remember to zero all relevant counters (area -, litre -, diesel counter etc.) in "**DATA/DELETE**", if required.

You can select the following functions, no matter, which implement is chosen: Some of the functions, such as area, will of course depend on the related encoded values for the implement.

For some implements there are further functions, e.g. the area functions. These special functions will be dealt with under the implement in question.

TRACTOR FUNCTIONS



SLIP = Wheel slip
PTO = Revolutions from the PTO
METRE = Distance travelled
BATT = Battery voltage

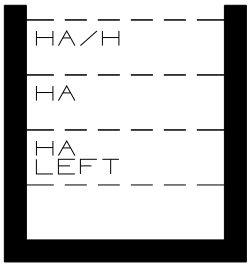
SLIP: Wheelslip in per cent. The relation between speed measured on a wheel or an axle and speed measured by radar. This function is active **only** if a radar is mounted and "**ON**" is encoded.

PTO: Revolutions per minute on the PTO. This function is active only if a PTO sensor has been mounted.

METRE: Travelled distance measured in metres and based on chosen speed sensor. Is started and stopped by the implement sensor or manually by pressing "**METRE**". (Chosen under encode).

BATT: Battery voltage supply for the computer.

AREA FUNCTIONS



HA/H = Travelling efficiency
HA = Area
HA LEFT = Remaining area

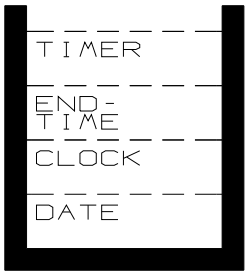
HA/H: Travelling efficiency. The size of the area worked at the present speed and with the present implement (working width).

HA: Area counter. Worked area in hectares since zeroing.

NB! A total counter for the area is found in "**DATA/DELETE**".

HA LEFT: Remaining area. Of the size of the field is encoded before start (in **"ENCODE**") the remaining area can be read here.

TIME FUNCTIONS



TIMER: Working time in hours and minutes
END TIME: The time when the work will be finished.
CLOCK: Time in hours:minutes:seconds
DATE: Day:month:year

TIMER: Used for measuring the time spent at a certain job. The timer can be stopped and started manually.

NB: the implement sensor does not control the timer.

END TIME: The time when the present job is expected to be finished calculated on the present travelling efficiency and the encoded remaining area.

CLOCK: Time shown in hours: minutes: seconds. Clock is set in "**ENCODE**".

DATE: The date shown as day: month: year. Date is set in "**ENCODE**".

TASK FUNCTION

It is possible to record up to 50 individual tasks in the version 4 TeeJet 5000; these 50 tasks are independent of each other and can be shared between all of the different implements.

If the task feature is not required, it is possible use the trip & total counters to record data in the version 4 TeeJet 5000.

If the "Task Feature" is required, then a task number must be selected before work commences. All trip counters (area, time and quantity) will be reset automatically when a new task number is selected.

The main functions in the "Task Feature" are as follows:

Start task
Stop task
See task
Delete task

The following is also possible if you possess the correct accessories:

Print task,

Necessary accessories: TeeJet mobile printer incl. cable TeeJet no. 905-242 connected to the System A plug on the TeeJet 5000.

If the System A socket is used by other equipment use connecting cable TeeJet no. 197-130.

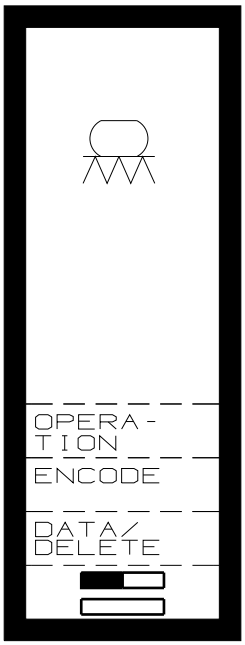
Data transfer to a PC via the RS232 output,

Necessary accessories: Power supply and serial cable.

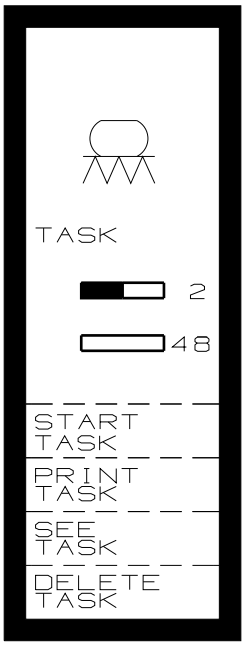
A PC with Windows 3.xx or Windows 95 is necessary to transfer data to a PC via serial cable.

TASK OPERATION

Select the “Task Feature” as follows:



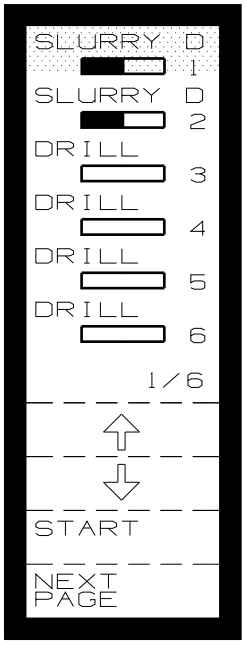
Pressing the bottom function key displays the following:



The first menu picture in the task feature shows which implement is being used and the number of tasks that already contain data (half filled rectangle). The number of empty tasks available in the memory are also displayed (the empty rectangle).

Pressing the “Start Task” function key, displays the following:

START TASK



Moving the cursor and using the “Start” function key gives you the possibility to either open a task that has already been worked on, or start a new task.

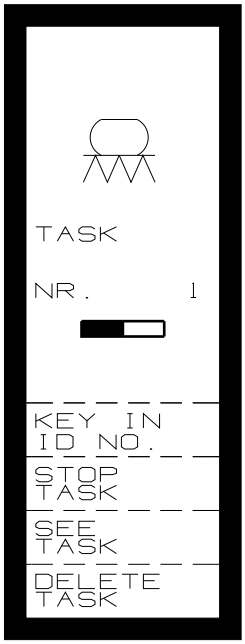
Note:

It is only possible to start/open, i.e. a sprayer task when sprayer has been selected as the implement. This means that only the tasks that relate to the implement used are displayed in the “Start Task” menu.

All trip counters (area, time and quantity) will continue from the previous values if an existing task has been selected.

All trip counters for the task are set to zero if a new task is started.

The following is displayed after starting a task:



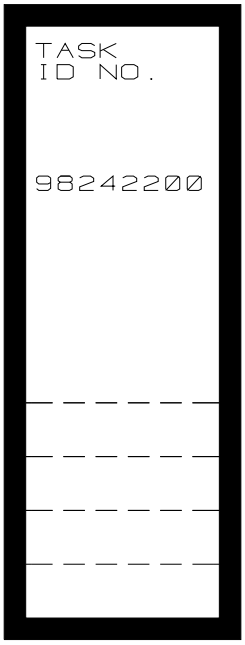
KEY IN ID NO.

STOP TASK

SEE TASK

DELETE TASK

ID NO.



Pressing the ID NO key allows the operator to encode an ID. Number, this number could, e.g. be a number that identifies a customer or an employee. It does not matter when the ID number is encoded, but the task must be started.

As the computer uses the task number for its own reference, it is not necessary to encode an ID. Number if this is not required.

Use the numeric keypad to encode the ID number. The ID number can be deleted at any time by pressing the **"C"** key.

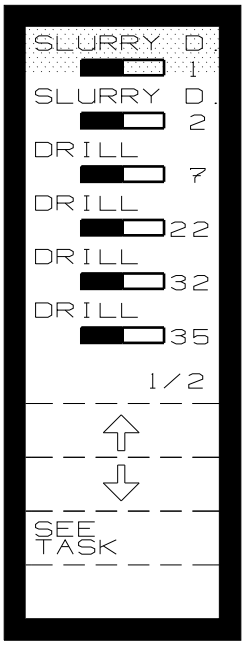
Pressing the "return" key displays the previous menu.

STOP TASK

Pressing this function key will stop the present task; it is possible to open the task again at any time as long as the task is still in the computer's memory.

NOTE: It is not possible to exit the implement menu if a task is active. The computer displays the following message: MENU CHANGE NOT PROHIBITED, and shows which task should be stopped before the implement menu can be changed.

SEE TASK



Pressing the "See Task" function key displays the picture to the left:

Move the cursor to the task to be seen and press the "See Task" function key.

It is now possible to see the contents of the task without having to start the task.

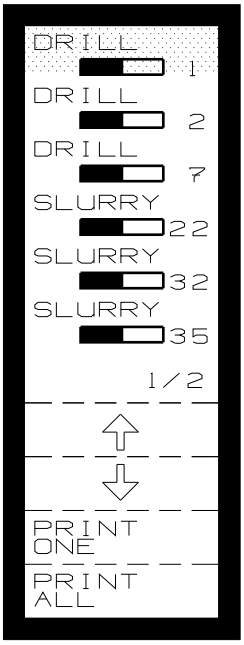
NOTE: All tasks that contain data can be seen regardless of the implement selected for operation, so it is possible to see tasks for, e.g. slurry spreader even if the implement chosen for operation is a sprayer.

DELETE TASK

Move the cursor to the task to be deleted and press the “Delete Task” function key. The entire contents for the selected task will now be deleted.

NOTE: All tasks that contain data can be deleted regardless of the implement selected for operation, so it is possible to delete tasks for, e.g. slurry spreader even if the implement chosen for operation is a sprayer.

PRINT TASK:



Pressing the “Print Task” function key displays the following:

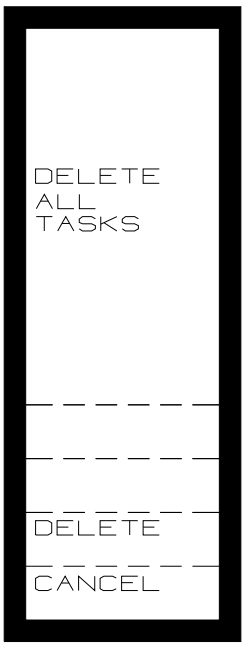
PRINT ONE:

Move the cursor to the task to be printed and press the “Print Task” function key. The contents of the selected task will be printed.

NOTE: All tasks that contain data can be printed regardless of the implement selected for operation, so it is possible to print tasks for, e.g. slurry spreader even if the implement chosen for operation is a sprayer.

PRINT ALL:

Pressing the “Print All” functions key prints all the tasks that contain data. Once the computer has finished printing pressing the return key, displays the following:



Pressing the “Delete” function key will delete all tasks.

If this is not desired, pressing the “cancel” function key will return the computer to the previous screen

PRINTING TASKS VIA A PC

To transfer and print tasks to a PC, the follow items are required:

TeeJet 5000 PC interface, incl. Power supply, *TeeJet stock number 905-168*

PC with Windows 3.xx or Windows 95/98 operating software

Office printer

Windows has 2 programs that you can use for transfer and printing tasks.

“Write or Word pad” are word processing programs that come with Windows 3.xx. or Windows 95/98.

“Terminal or Hyper Terminal” are communication programs that can, amongst other things, be used to import text files via the PC’s serial port.

Other similar Windows programs can of course be used if this is desirable

CONNECTION OF THE TEEJET 5000 TO THE PC:

The TeeJet 5000 PC interface consists of a special serial cable, a 9 to 25 pin adapter and a transformer to connect to the mains power supply.

The adapter that changes the 9-pin plug to a 25-pin plug is used when the PC has a 25 pin serial port. Connect one end of the PC. Interface to the flying lead on the TeeJet 5000, and the other end to the serial port being used on the PC. Connect the transformer to the mains power supply.

SETTING "TERMINAL" UP.

Double click on the "Terminal" icon. You can find the program icons in various places, depending on the way that Windows has been set-up. Refer to the Windows operator manuals for further instruction.

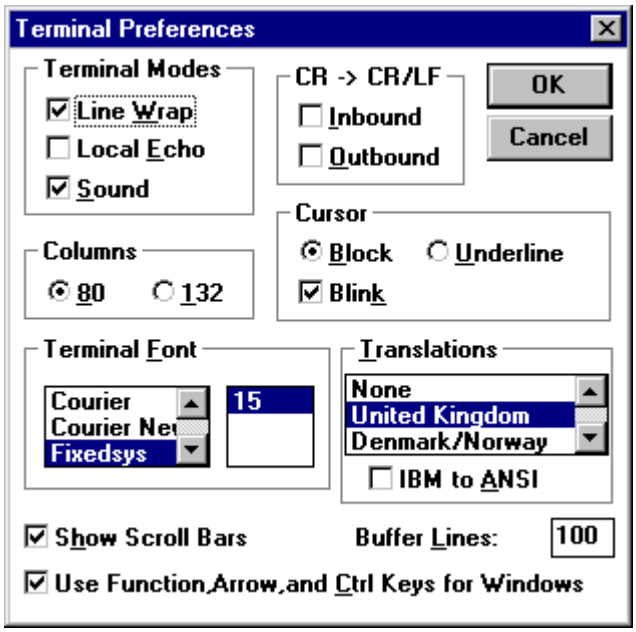


Figure 1. Screen shot of **settings/terminal preferences**. (Windows Terminal)

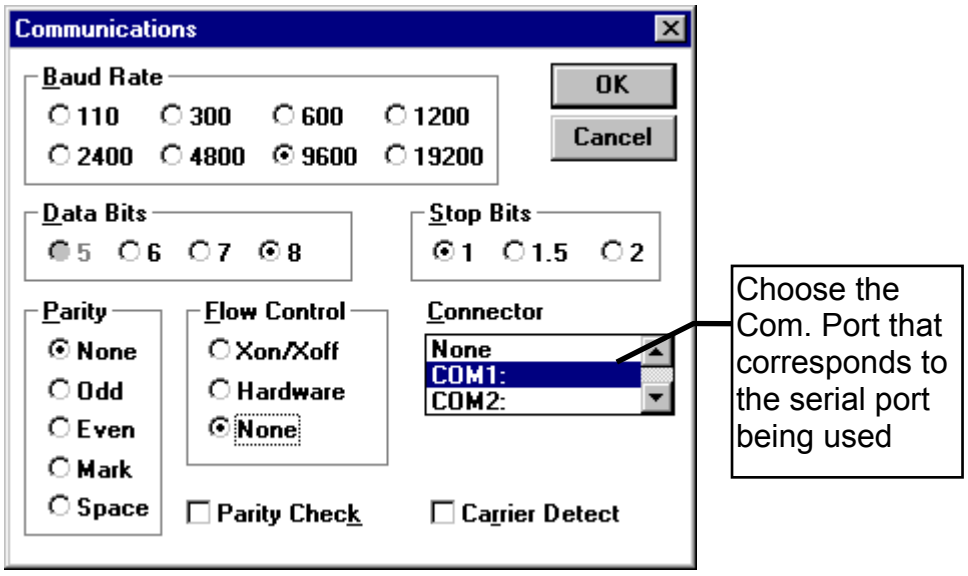


Figure 2. Screen shot of **settings/communications** set-up. (Windows Terminal)

When you have finished set-up, choose "**Save As**" in the file menu. A dialogue box is shown where it is possible to save the set-up to a file. The program suggests **.trm** as the file type. Next time you wish to transfer data, all you have to do is open this file and all the settings will be correct.

SETTING "HYPER TERMINAL" UP.

Click on the "Hyper Terminal" icon. You can find the program icons in various places, depending on the way that Windows95 has been set-up. Refer to the Windows95/98 operator manuals for further instruction. Double click on the "Hypertrm.exe" icon.

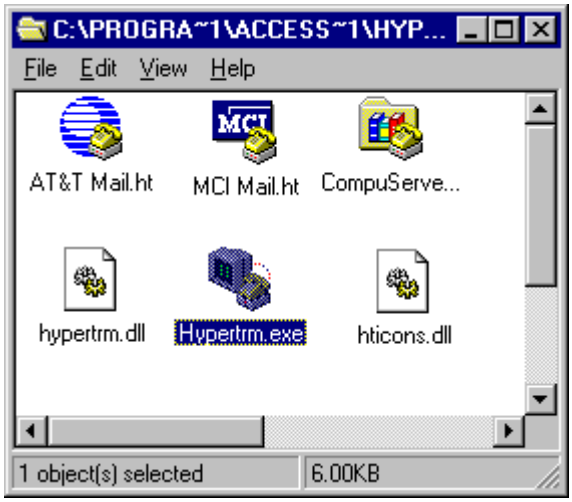


Figure 3. Screen shot of "Hyper Terminal"

Select a name and an icon for this connection. Then choose the correct serial port for your PC.

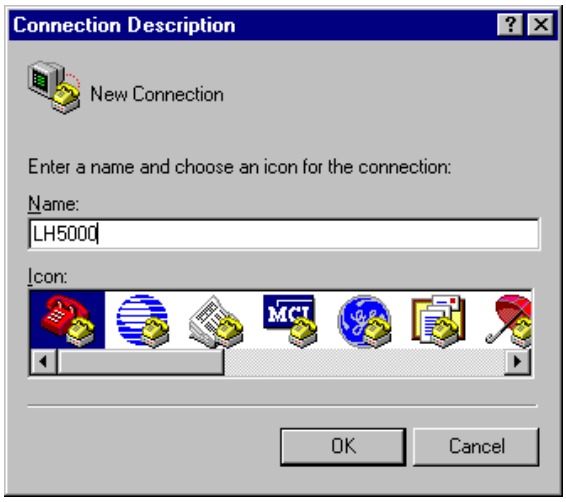


Figure 4 "New Connection"

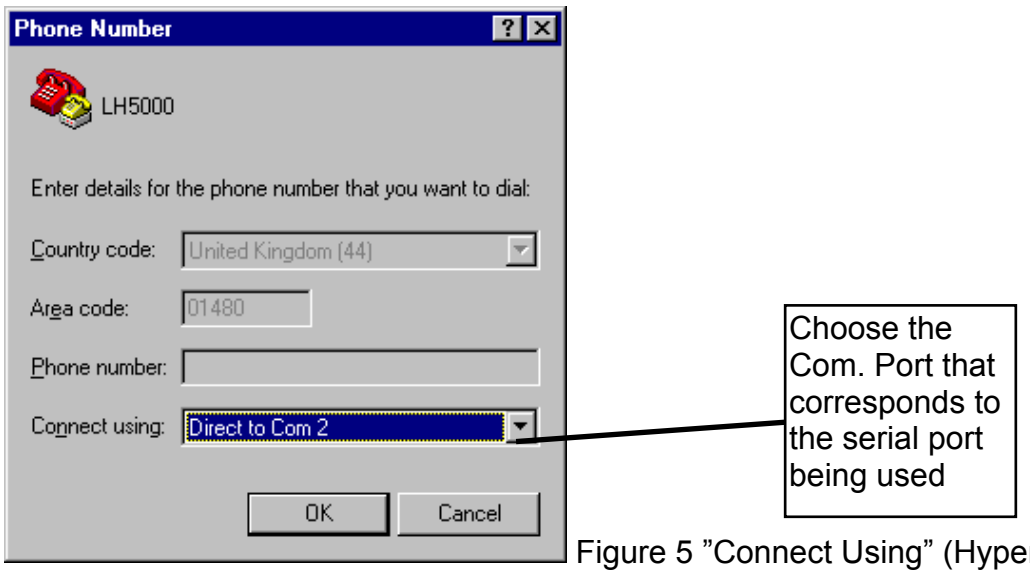


Figure 5 ”Connect Using” (HyperTerminal)

Change the Port settings to the following:

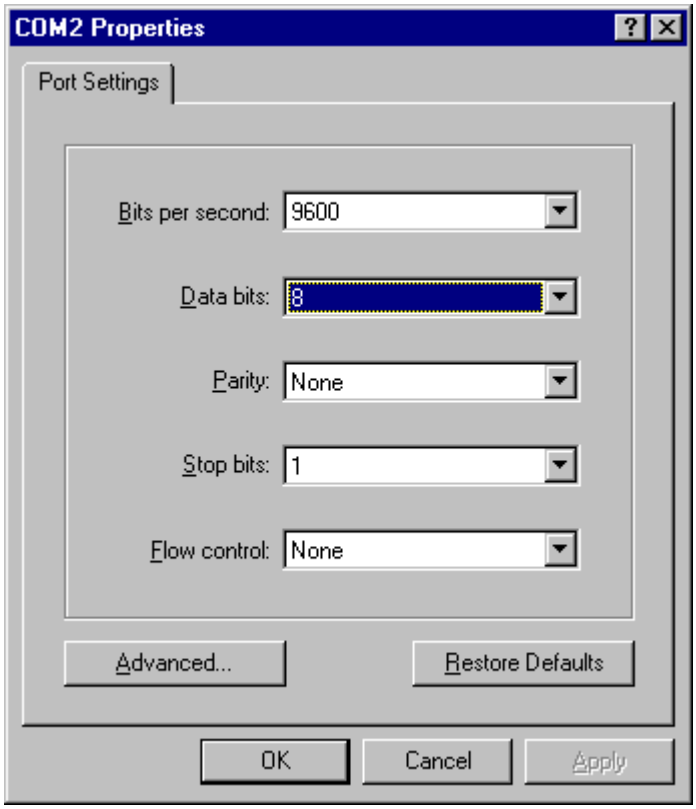


Figure 6 “Serial port properties” (HyperTerminal)

When you have finished set-up, choose “**Save As**” in the file menu. A dialogue box is shown where it is possible to save the set-up to a file. The program suggests **.ht** as the file type. Next time you wish to transfer data, all you have to do is open this file and all the settings will be correct.

RECEIVE TEXT.

The TeeJet 5000 sends a fully formatted text file as a **.txt** type file. This file is received in “Terminal or Hyper Terminal” and can then be saved wherever you wish. It is recommended to make a folder specifically for the TeeJet 5000 to ease management of these files.

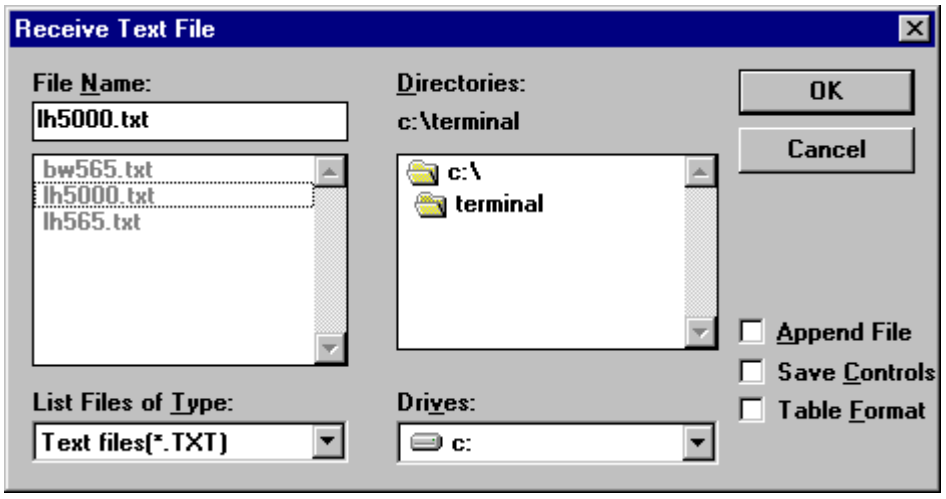


Figure 7. Screen shot of **transfers/receive text file**. (Windows Terminal)

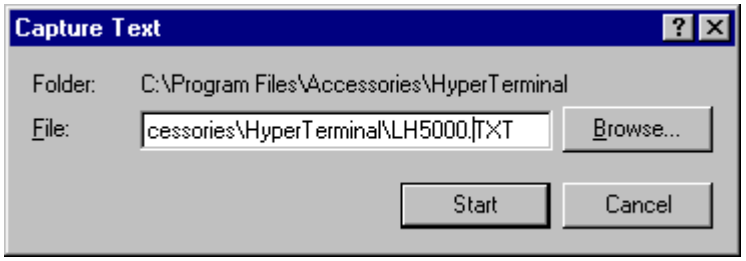


Figure 8. Screen shot of **transfers/capture text** (Hyper Terminal)

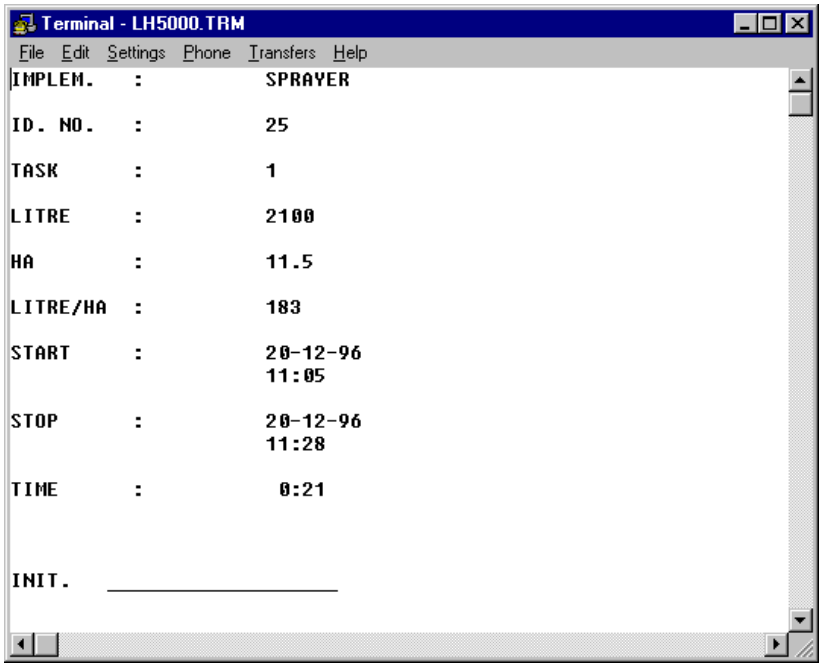


Figure 9. Screen shot of sprayer task.

EDITING THE TEXT.

Once saved in the PC. It is possible to edit these text files in almost any word processing program that can open **.txt** files.

To ensure correct page layout, etc. We recommend using COURIER type with a size of 10 cpi.

DATA/DELETE

This menu comprises of 3 ***main options***:

1. **Total counter display** (not found elsewhere).

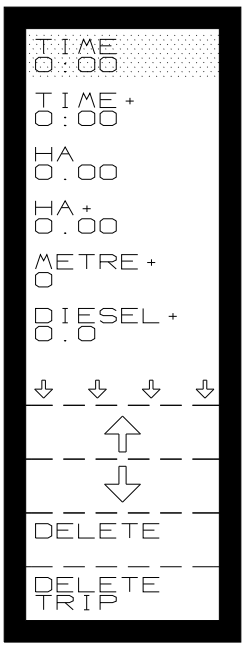
   Trip counter display

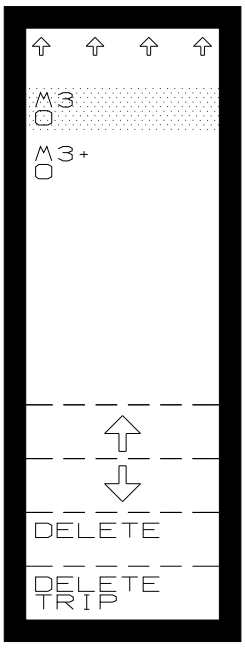
2. **Delete counters separately.**
3. **Delete all trip counters simultaneously.**

It is not possible to see/select the total counters in the operation menus. Therefore the "**DATA/DELETE**" function is the only one offering these readings.

Set the cursor (using the arrow keys) on the counter to be zeroed. Pressing "**DELETE**" deletes this counter.

If "**DELETE TRIP**" is pressed, **all** trip counters will be zeroed/deleted simultaneously.





The functions are:

TIME:	Trip counter for consumed time since last zeroing.
TIME +:	Total counter for consumed time since last zeroing.
HA:	Trip counter for worked area since the last reset.
HA+:	Total counter for area since last zeroing.
METRE+:	Travelled metres since the last reset. Deleted as the total counter.
DIESEL+:	Fuel consumption since the last reset. Deleted as the total counter.
(AMOUNT):	Trip counter for consumption since the last reset.
(AMOUNT+):	Total counter for consumption since the last reset.

NOTE: The TOTAL+ counters are **only** found in the "**DATA/DELETE**" function and cannot be selected in "**OPERATION**".

FORWARD SPEED SENSOR

There are 3 possible speed sensors available in each of the TeeJet 5000 version 4.xx implement programs.

WHEEL TRACTOR

WHEEL IMPLEMENT (Wheel sprayer, Wheel spreader, etc.)

RADAR

The best speed sensor for the implement in question is described in each of the implement's chapters, but the calibration procedure for each sensor type is almost the same.

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for fertiliser spreading. As the distance driven per pulse can be low for, i.e. a sensor fitted in the gearbox, the distance per pulse is encoded in centimetres with 3 decimals.

Pressing the **"WHEEL TRACTOR"** key allows the operator to select which sensor the TeeJet 5000 gets it's speed signal from. The selected sensor is always shown at the top of the display along with the distance per pulse.

The TeeJet 5000 has an automatic speed calibration program that should be used for sensors that generate more than 1 pulse per metre. The automatic calibration procedure can also be used for normal speed sensors if the distance per pulse is not greater than 100 cm. (Wheel circumference divided by number of magnets).

Manual speed calibration must be used if the distance driven per pulse is greater than 100 cm. (fitting more magnets to the wheel may solve this problem and allow the automatic calibration procedure to be used).

WHEEL IMPLEMENT

Certain implements are fitted with a speed sensor that give a correct number of pulses for automatic application with the TeeJet 5000. This sensor should be used if mentioned in the chapter concerning the implement in question.

Calibrating the wheel implement sensor is almost the same as described for wheel tractor.

RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar. Radar and the number of pulses per metre will be displayed at the top of the screen. The number of pulses per metre will vary from radar to radar; typical figures are 100 or 130.

The angle at which the radar is fitted in relation to the ground will affect the number of pulses per metre, we recommend using the automatic calibration procedure, which is described in the following for wheel tractor.

IMPORTANT! Working in crops that are blowing in the wind or working in areas with surface water can affect the accuracy of the radar, we recommend using a speed sensor fitted to the tractor under these circumstances.

MANUAL CALIBRATION

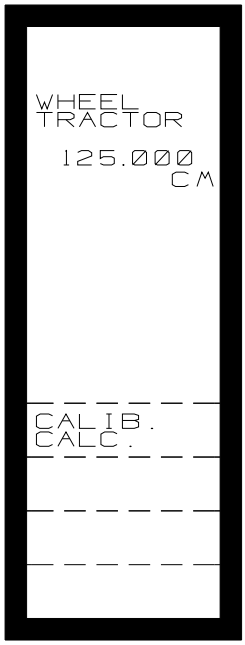
1. Mark the wheel and the ground.
2. Drive exactly 10 rotations of the wheel (remember to count rotations on the wheel fitted with magnets).
3. Mark the ground again
4. Measure the distance between the 2 marks in centimetres and divide by the number of rotations and the number of magnets fitted on the wheel. The result is the distance per pulse and can be encoded in centimetres with 3 decimals (see the following formula).

Example:

The distance between the 2 marks is 52.80 metres (5280 centimetres).
The wheel has turned 10 times:
The wheel is fitted with 4 magnets.

$$\frac{\textit{5280 (Distance between marks in cm)}}{\textit{10 (Wheel rotations) x 4 (Magnets)}} = \textit{132,000 cm (Distance per pulse)}$$

The calculated figure is encoded thus:

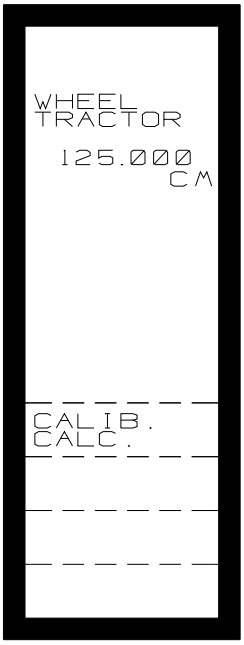


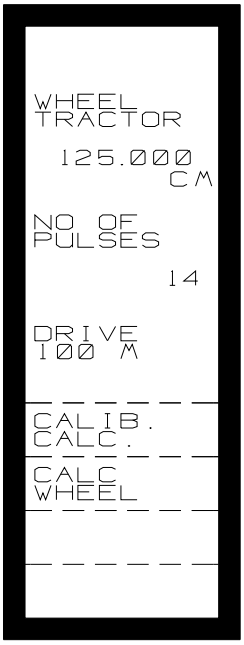
1. Press the **"CALIB. CALC."** key
2. Encode the value using the numeric keypad.
3. The encoded figure can be deleted at anytime by pressing the "C" key.

AUTOMATIC SPEED SENSOR CALIBRATION

1. Measure a stretch of 100 metres and drive to the start mark.

2. Press the “CALIB. CALC.” Key twice and the following is displayed:



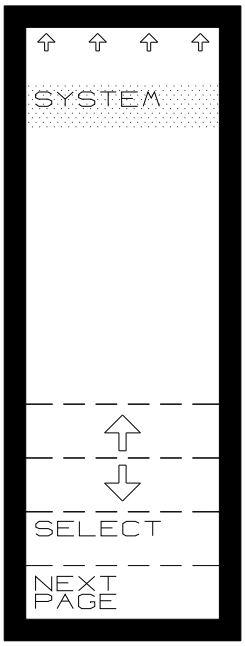


3. Drive the 100 metres and stop exactly at the stop mark.

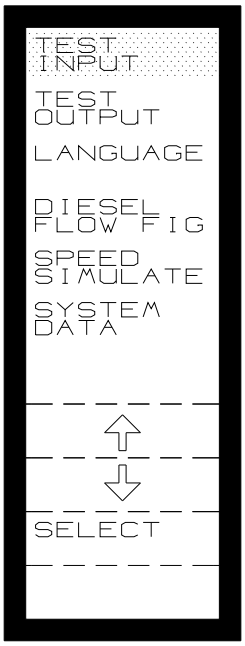
4. If the computer has received enough pulses, “CALC. WHEEL” will be displayed. Press this key and the calibration procedure is finished. The calculated value is displayed at the top of the screen.

SYSTEM:

This function allows, amongst other things, the various inputs and outputs to be tested.



Pressing “Select” will display the following:



TEST INPUT:
Test of all inputs for each implement (sensors).

TEST OUTPUT:
Test of engine valve etc. for each implement.

SYSTEM DATA:
The operator has **no** access to this function. It contains important system data, which must not be changed.

LANGUAGE:
Select the required language here.

DIESEL FLOW FIGURE
Encode the flow figure for the optional diesel flowmeter. It is necessary to encode a diesel flow figure, as the diesel flow/pulse differs from flowmeter to flowmeter

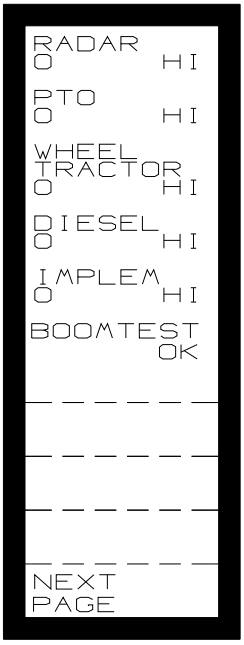
TEST INPUT/OUTPUT

Use test input if you suspect defect sensors.

There is a counter underneath each “input description” on the left-hand side, that registers the number of times that the input has been activated (the counter is reset each time you leave the TEST INPUT menu).

The right-hand side of the screen displays the status of the input (HI/LO).

Page through the screens by pressing “NEXT PAGE” (total 4 screens).



RADAR: Signal from the radar when driven slowly forward.

PTO: Signal from the PTO axle when turning.

WHEEL TRACTOR: Signal from the wheel sensor when driven slowly forward.

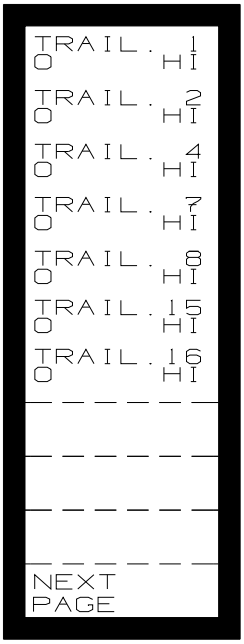
DIESEL: Signal from the diesel flowmeter when diesel is being used.

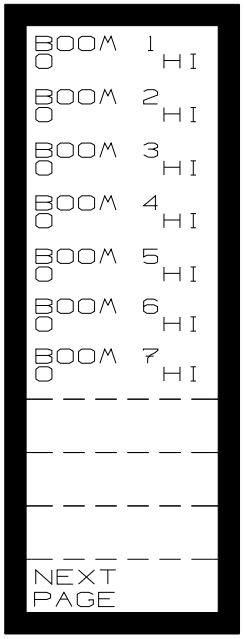
IMPLEM: Signal from the implement sensor when raised, e.g. the lift switch or a sensor fitted on the lift-arms.

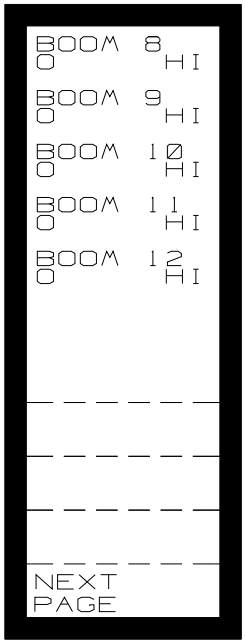
BOOMTEST: One of the two following can be displayed:

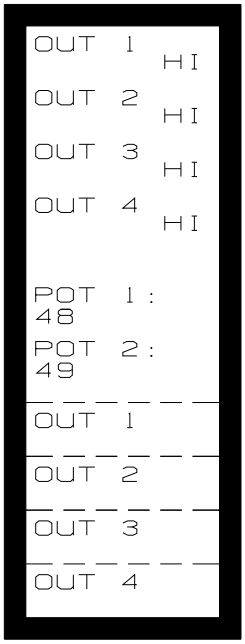
OK: The boom section interface is connected correctly.

ERROR: No boom section interface connected or when there is a fault in the system.









TEST INPUT/OUTPUT, SPRAYER

TEST INPUT	*SPRAYER (OTHER TYPE)*	*HOLDER*
TRAIL 1:	Signal from pressure sensor	Signal from pressure sensor
TRAIL 2:	Signal from sprayer flowmeter. Turn the paddle wheel by hand or let the sprayer spray.	Signal from sprayer flowmeter. Turn the paddle wheel by hand or let the sprayer spray.
TRAIL 4:	Signal from the wheel sensor fitted on a trailed sprayer.	Signal from the wheel sensor fitted on a trailed sprayer
TRAIL 7:	Signal from the sprayer's open/close function (main on/off switch or manual main valve).	Signal from the sprayer's open/close function (main on/off switch or manual main valve).
TRAIL 8:	Signal from filling flowmeter. Turn the paddle wheel by hand or fill the sprayer.	Signal from filling flowmeter. Turn the paddle wheel by hand or fill the sprayer.
TRAIL 15:	Not used.	Not used.
TRAIL 16:	Not used	Not used.
BOM 1 – 12	Shows, which of the encoded boom sections, are open or closed.	Shows, which of the encoded boom sections, are open or closed.
TEST OUTPUT		
OUT 1:	Signal that controls the pressure, and hence increases the application rate. Pressure will increase as long as the key is activated.	Signal that controls the pressure, and hence increases the application rate. Pressure will increase as long as the key is activated.
OUT 2:	Signal that controls the pressure, and hence decreases the application rate. Pressure will decrease as long as the key is activated.	Signal that controls the pressure, and hence decreases the application rate. Pressure will decrease as long as the key is activated.
OUT 3:	Not used.	Not used.
OUT 4:	Signal to the fill alarm or valve, in conjunction with automatic fill flow.	Signal to the fill alarm or valve, in conjunction with automatic fill flow.
POT 1 – 2	Not used.	Not used.

TEST INPUT/OUTPUT, FERTILISER SPREADER

TEST INPUT	*OTHER TYPE*	*OTHER TYPE W. REG.*
TRAIL 1:	Signal from shaft speed sensor RPM 1	Signal from RPM sensor fitted to discs. (RPM 1)
TRAIL 2:	Signal from shaft speed sensor RPM 2, or signal from weigh interface.	Signal from floor chain (RPM 2)
TRAIL 4:	Signal from speed sensor fitted to trailed machines.	Signal from speed sensor fitted to the spreader.
TRAIL 7:	Signal from area override sensor fitted to the spreader, i.e. open/close	Area override ON/OFF from the spreader.
TRAIL 8:	Not used.	Not used.
TRAIL 15:	Not used.	Not used.
TRAIL 16:	Not used.	Not used.
BOM 1 – 12	Signal from boom section switches via system B plug. (boom compensation), if used.	Signal from individual boom sections via system B (boom section compensation), if used.
TEST OUTPUT		
OUT 1:	Not used.	Signal to the regulating device.
OUT 2:	Not used.	Signal to the regulating device.
OUT 3:	Not used.	Not used.
OUT 4:	Not used.	Not used.
POT 1 – 2	Not used.	Not used.

TEST INPUT	*BØGBALLE (E/EX & D/DZ)*	*BREDAL*
TRAIL 1:	Signal from shaft speed sensor.	Signal from RPM 1 sensor.
TRAIL 2:	Not used.	Signal from weigh cells.
TRAIL 4:	Speed signal from trailed implement.	Signal from speed sensor fitted to the driving wheel.
TRAIL 7:	Not used.	Area override sensor fitted to the arm of the driving wheel.
TRAIL 8:	Not used.	Not used.
TRAIL 15:	Not used.	Not used.
TRAIL 16:	Not used.	Not used.
BOM 1 – 12	Error is displayed as no boom interface is connected.	Error is displayed as no boom interface is connected.
TEST OUTPUT		
OUT 1:	Signal to close the gates.	Signal to close the gate.
OUT 2:	Signal to open the gates.	Signal to open the gate.
OUT 3:	Not used.	Not used.
OUT 4:	Not used.	Not used.
POT 1 – 2:	POT 1 shows the position of the actuator. Lowest value when the gates are closed. POT 2 is not used.	Shows the position of the actuator. Lowest value when the gate is closed, highest value when the gate is open.

TEST INPUT	*BREDAL (HYDRAULIC)*	*BREDAL K RAMP*
TRAIL 1:	Signal from RPM sensor fitted to the spinning discs.	Signal from RPM sensor fitted to the spinning discs.
TRAIL 2:	Signal from weigh cells.	Signal from weigh cells.
TRAIL 4:	Speed signal from sensor fitted to spreader wheel.	Speed signal from sensor fitted to spreader wheel.
TRAIL 7:	Signal from RPM sensor fitted to the hydraulic motor.	Signal from RPM sensor fitted to the belt hydraulic motor.
TRAIL 8:	Not used.	Signal from RPM sensor fitted to the auger hydraulic motor.
TRAIL 15:	Not used.	Not used.
TRAIL 16:	Not used.	Not used.
BOM 1 – 12	Error is displayed as no boom interface is connected.	Error is displayed as no boom interface is connected.
TEST OUTPUT		
OUT 1:	Completely opens the proportional valve, when the key is released the valve shuts.	Completely opens the belt proportional valve, when the key is released the valve shuts.
OUT 2:	Not used.	Completely opens the auger proportional valve, when the key is released the valve shuts.
OUT 3:	Not used.	Not used.
OUT 4:	Not used.	Not used.
POT 1 – 2:	Not used.	Not used.

TEST INPUT	*RAUCH AERO*	*RAUCH BETA/DELTA*
TRAIL 1:	Not used.	Signal from shaft speed sensor (RPM 1).
TRAIL 2:	Signal from sensor on feed rollers.	Not used.
TRAIL 4:	Signal from speed sensor fitted to trailed machines.	Speed signal from trailed implement.
TRAIL 7:	Area override on/off from the machine.	Area override on/off signal from implement.
TRAIL 8:	Not used.	Not used.
TRAIL 15:	Not used.	Not used.
TRAIL 16:	Not used.	Not used.
BOM 1 – 12	Error is displayed as no boom interface is connected.	Error is displayed as no boom interface is connected.
TEST OUTPUT		
OUT 1:	Fully opens the reg. Valve momentarily and the feed rollers rotate at full speed. The valve shuts and the feed rollers stop instantly when the key is released.	Signal to close the gate (left).
OUT 2:	Not used.	Signal to open the gate (left).
OUT 3:	Not used.	Signal to close the gate (right).
OUT 4:	Not used.	Signal to open the gate (right).
POT 1 – 2:	Not used.	Shows the position of the actuators.

TEST INPUT	*RAUCH AXERA H*	*REIβL*
TRAIL 1:	Signal from shaft speed sensor (RPM 1).	Signal from RPM sensor fitted to discs. (RPM 1)
TRAIL 2:	Not used.	Signal from floor chain (RPM 2)
TRAIL 4:	Speed signal from trailed implement.	Signal from speed sensor fitted to the spreader.
TRAIL 7:	Area override on/off signal from implement.	Area override ON/OFF from the spreader.
TRAIL 8:	Not used.	Not used.
TRAIL 15:	Not used.	Not used.
TRAIL 16:	Not used.	Not used.
BOM 1 – 12	Error is displayed as no boom interface is connected.	Signal from individual boom sections via system B (boom section compensation), if used.
TEST OUTPUT		
OUT 1:	Signal to close the gate (left).	Signal to the regulating device.
OUT 2:	Signal to open the gate (left).	Signal to the regulating device.
OUT 3:	Signal to close the gate (right).	Not used.
OUT 4:	Signal to open the gate (right).	Not used.
POT 1 – 2:	Shows the position of the actuators.	Not used.

TEST INPUT/OUTPUT, SEED DRILL

TEST INPUT	*OTHER TYPE*	*NORDSTEN*
TRAIL 1:	Signal from RPM sensor fitted to the drill shaft.	Signal from RPM sensor fitted to the drill shaft.
TRAIL 2:	Signal from RPM sensor fitted to the tramlining clutches. When the shaft is rotated slowly, the status changes between HI and LO and the number of impulses is registered. The status changes to LO if the shaft is turned quickly	Signal from RPM sensor fitted to the drill shaft drive motor.
TRAIL 4:	Signal from the hopper level sensor (empty hopper).	Speed signal from sensor fitted to the seed drill.
TRAIL 7:	Area override on/off signal from sensor fitted to seed drill, i.e. marking system or when the drill is raised.	Area override signal from sensor fitted to seed drill.
TRAIL 8:	Not used.	Signal from RPM sensor fitted to the fan or to the left clutch (depending on drill model).
TRAIL 15:	Not used.	Signal from the hopper level sensor (empty hopper).
TRAIL 16:	Not used.	Signal from RPM sensor fitted to the right clutch.
BOM 1 – 12	Not used.	Not used.
TEST OUTPUT		
OUT 1:	Motor+ signal for when tramlines are to be made.	Signal to control tramlining. Pressing OUT 1 makes tramlines.
OUT 2:	Not used.	Signal to control the speed of the drill shaft motor. Pressing OUT 2 rotates the drill shaft.
OUT 3:	Not used.	Not used.
OUT 4:	Not used.	Not used.
POT 1 – 2:	Not used.	Not used.

TEST INPUT	*LEMKEN*	*SIMBA*
TRAIL 1:	Signal from the RPM sensor fitted on the drill shaft.	Signal from RPM sensor fitted on drill shaft 1
TRAIL 2:	Signal from the RPM sensor fitted on the drill shaft drive motor.	Signal from the RPM sensor fitted on the drill shaft drive motor (depending on drill model).
TRAIL 4:	Speed signal from sensor fitted to the seed drill.	Speed signal from sensor fitted to the seed drill.
TRAIL 7:	Signal from the implement sensor fitted on the drill.	Signal from the implement sensor fitted on the drill.
TRAIL 8:	Signal from the RPM sensor fitted on the fan.	Signal from the RPM sensor fitted on fan 1.
TRAIL 15:	Signal from the hopper level sensor fitted in the seed hopper (empty tank).	Signal from the hopper level sensor fitted in the seed hopper (empty tank).
TRAIL 16:	Not used.	Signal from the RPM sensor fitted on fan 2.
BOM 1 – 12	Not used.	**BOOM 2:** Signal from the RPM sensor fitted to drill shaft 2. **BOOM 8:** Signal from the RPM sensor fitted on fan 2. **BOOM 1, 3-7, 9-12:** Not used.
TEST OUTPUT		
OUT 1:	Signal that controls the tramlining for the left side of the drill (tramlines are made on the left side when OUT 1 is pressed)	Signal that controls the tramlining (tramlines are made when OUT 1 is pressed).
OUT 2:	Signal that controls the speed of the drill shaft drive motor (the drill shaft turns when OUT 2 is pressed).	Signal that activates 1/2 and 1/1 working width.
OUT 3:	Signal that controls the tramlining for the right side of the drill (tramlines are made on the right side when OUT 2 is pressed)	Not used.
OUT 4:	Not used.	Not used.
POT 1 – 2:	Not used.	Not used.

TEST INPUT/OUTPUT, BALER

TEST INPUT	*BALER*
TRAIL 1:	Signal from the bale counter.
TRAIL 2:	Signal from the RPM 3 sensor or bale weight if fitted.
TRAIL 4:	Signal from RPM 2 sensor.
TRAIL 7:	Signal from RPM 1 sensor.
TRAIL 8:	Not used.
TRAIL 15:	Not used.
TRAIL 16:	Not used.
BOM 1 – 12	Not used.
TEST OUTPUT	
OUT 1:	Not used.
OUT 2:	Not used.
OUT 3:	Not used.
OUT 4:	Not used.
POT 1 – 2:	Not used.

TEST INPUT/OUTPUT, SLURRY SPREADER

TEST INPUT	*OTHER TYPE*	*HYDRAULIC*
TRAIL 1:	Signal from RPM 1 sensor, i.e. distributor or macerator.	Signal from RPM sensor fitted to the distributor.
TRAIL 2:	Signal from the slurry flowmeter or signal from RPM sensor fitted to a positive displacement pump.	Signal from flowmeter.
TRAIL 4:	Speed signal from sensor fitted on the slurry spreader.	Speed sensor fitted on the slurry spreader.
TRAIL 7:	Area override on/off signal from sensor fitted on the slurry spreader.	Area override on/off signal from sensor fitted on the slurry spreader.
TRAIL 8:	Not used.	Signal from the RPM sensor fitted to the pump.
TRAIL 15:	Not used.	Not used.
TRAIL 16:	Not used.	Not used.
BOM 1 – 12	Signal from boom section switches via system B plug if used.	Signal from boom section switches via system B plug if used.
TEST OUTPUT		
OUT 1:	Signal to open the reg. Valve. The application rate must increase.	Signal to open the reg. Valve.
OUT 2:	Signal to close the reg. Valve. The application rate must decrease.	Signal to close the reg. Valve.
OUT 3:	Not used.	Not used.
OUT 4:	Not used.	Not used.
POT 1 – 2:	Not used.	Not used.

TEST INPUT	*HORSCH*	*ZUNHAMMER*
TRAIL 1:	Not used.	Not used.
TRAIL 2:	Signal from RPM sensor fitted on the pump (flow).	Signal from RPM sensor fitted on the pump (flow).
TRAIL 4:	Signal from the wheel sensor fitted on the slurry spreader.	Signal from the wheel sensor fitted on the slurry spreader.
TRAIL 7:	Signal from the implement sensor fitted on the slurry spreader.	Signal from the implement sensor fitted on the slurry spreader. **Note!** Always active 0V
TRAIL 8:	Signal from the filling mechanism.	Signal from the filling mechanism.
TRAIL 15:	Not used.	Not used.
TRAIL 16:	Not used.	Not used.
BOM 1 – 12	Signal from the boom section switches via the system B plug (boom compensation) if this is used.	**BOOM 1-5:** Signal from the boom section switches via the system B plug (boom compensation) if this is used. **BOOM 6:** Alarm, no slurry flow. **BOOM 7:** Alarm, High pressure. **BOOM 8:** Alarm, tank valve closed. **BOOM 9:** Alarm, fill pipe in. **BOOM 10:** Full tank. **BOOM 11:** Re-circulation.
TEST OUTPUT		
OUT 1:	Signal to open the proportional valve completely. When the key is released the valve shuts.	Signal to open the proportional valve completely. When the key is released the valve shuts.
OUT 2:	Not used.	Not used.
OUT 3:	Not used.	Not used.
OUT 4:	Not used.	Not used.
POT 1 – 2:	Not used.	Not used.

TEST INPUT/OUTPUT, OTHER IMPLEMENT

TEST INPUT	*OTHER IMPLEMENT*
TRAIL 1:	Not used.
TRAIL 2:	Not used.
TRAIL 4:	Signal from a wheel sensor fitted to an implement.
TRAIL 7:	Signal from an implement sensor fitted to the implement.
TRAIL 8:	Not used.
TRAIL 15:	Not used.
TRAIL 16:	Not used.
BOM 1 – 12	Not used.
TEST OUTPUT	
OUT 1:	Not used.
OUT 2:	Not used.
OUT 3:	Not used.
OUT 4:	Not used.
POT 1 – 2:	Not used.

DIESEL FLOW FIGURE

The calibration figure can be found as follows:

Diesel-Flow figure = 0,001 Millilitre per pulse

Example 1:

The flowmeter specifications say that 1 pulse is generated for each millilitre fuel.

Diesel-flow figure = (1 ml / 0,001 ml)

Diesel-flow figure = 1000

Example 2:

The flowmeter specifications say that 1 pulse is generated for every 5-millilitre fuel.

Diesel-flow figure = (5 ml / 0,001 ml)

Diesel-flow figure = 5000

SPEED SIMULATION

It is possible to simulate a speed for, i.e. flow tests, etc. By pressing the “Speed Simulate” key

To use this function, do as follows:

Set the “Speed Simulate” function to ON, select the operation screen for the required implement and enter in a speed using the numeric keypad.

Speed simulation can be cancelled in 2 different ways:

1. Drive the machine forward. As soon as a pulse from the wheel sensor is given, speed simulate will be cancelled.
2. Encode the simulated speed as 0, after 8 seconds, select “System”, and switch “Speed Simulate” OFF.

GPS SYSTEM

Select whether the DGPS functions are available or not (only displayed if the TeeJet 5000 is a DGPS version).

SYSTEM DATA

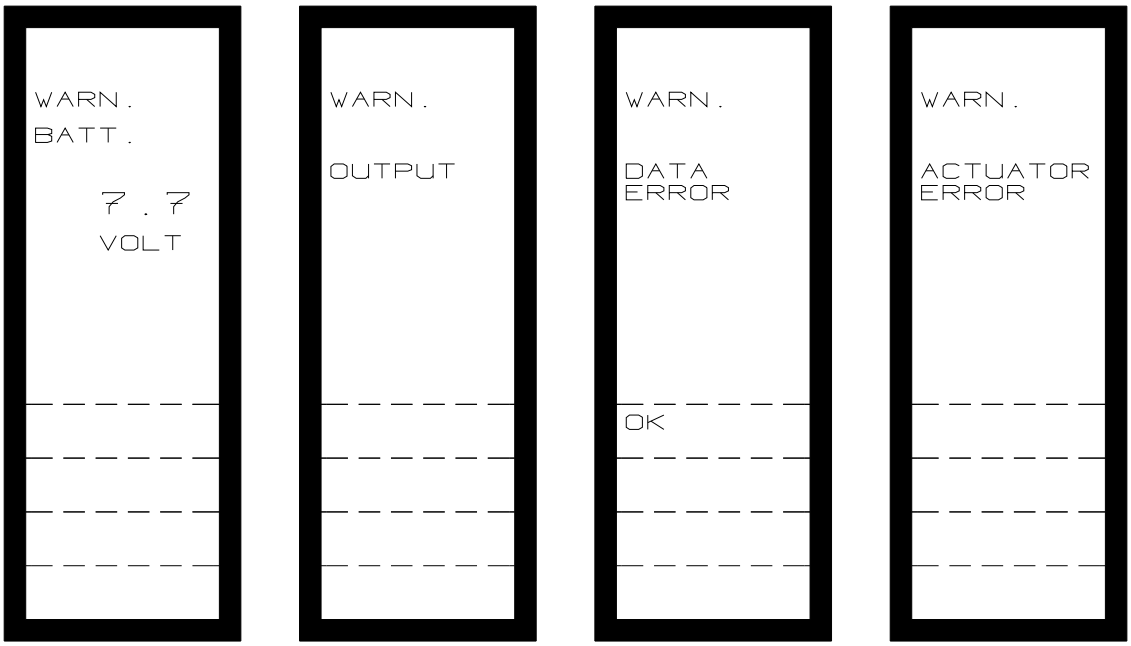
System settings not available to the user.

IMPLEMENT INFO

The total time and area that the TeeJet 5000 has been in operation (only registered if area is being counted). “COUNTER OVER XX” shows the amount of time and the total area that the implement has been used over the max. operating speed set by the implement manufacture.

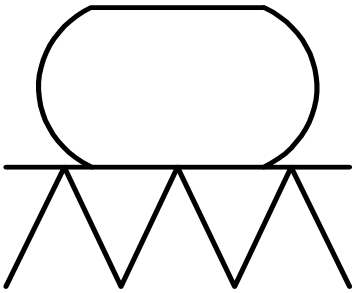
GENERAL WARNINGS:

The TeeJet 5000 has the following general warnings:



1. **WARN. BATT**: Displayed when the power supply to the TeeJet 5000 falls to 10V, This warning disappears when the power supply reaches 10V again.
2. **WARN. OUTPUT**: Displayed when there is a short circuit on a controlling device, i.e. clutches, motor, etc. This warning disappears when there is no longer a short circuit.
3. **WARN. DATA ERROR**: Displayed when a fault occurs in encodements and counters. This warning can be removed by pressing the **RETURN** key. Check **all** encodements, if the problem persists please contact your local dealer.
4. **WARN. ACTUATOR ERROR**: Displayed when a problem occurs with an actuator on a fertiliser spreader.
   Check the wiring, if the problem persists, please contact your local dealer.

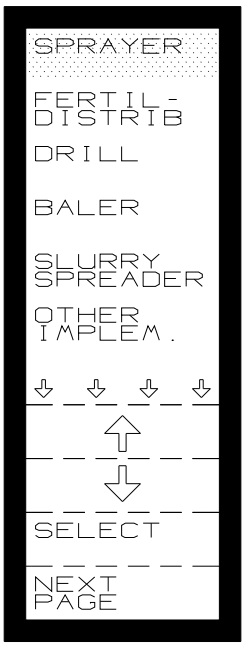
Sprayer

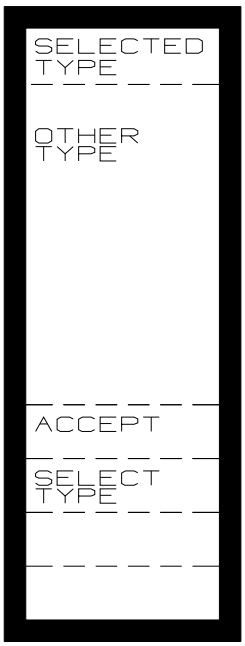


SPRAYER 3.2
SPRAYER (OTHER TYPE) 3.3
SPRAYER OPERATION 3.3
SPRAYER FUNCTIONS: 3.4
EXTRA TRACTOR FUNCTIONS IN THE SPRAYER PROGRAM 3.6
BOOM SECTION ON/OFF 3.7
FILLING FUNCTION 3.7
SPRAYER ENCODE 3.9
DOSERATE 3.9
STEP% 3.9
LITRE LEFT 3.9
HA LEFT 3.10
FLOW FIGURE 3.10
BOOM WIDTH 3.11
DRIVE FACTOR: 3.11
REGULATION DELAY 3.11
UNIFO. PRESS: 3.11
SPEED SENSOR (KM/H) 3.11
IMPLEMENT SENSOR 3.11
PRESSURE SENSOR 3.12
TANK VOLUME 3.12
METRE SWITCH 3.12
SYSTEM B PLUG 3.12
PTO SENSOR 3.12
WORK HOUR ON/OFF 3.12
WARNINGS 3.13
DATE - CLOCK: 3.13

SPRAYER

Select sprayer from the basic menu:

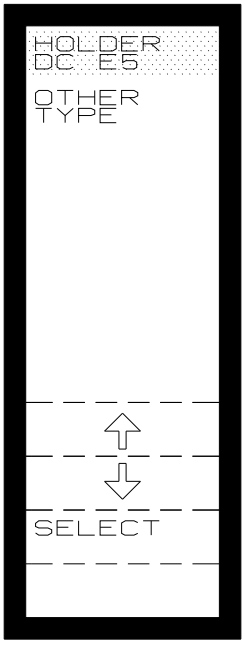




Move the cursor to “Sprayer” and press the “Select” function key; it is now possible to choose between the 2 sprayer programs.

1. HOLDER DC E5 (special program for Holder sprayers with dose control manifold with motorised valves).
2. OTHER TYPE (used for all other sprayer types)

If the correct sprayer type is shown in “Selected type” menu, press “Accept”

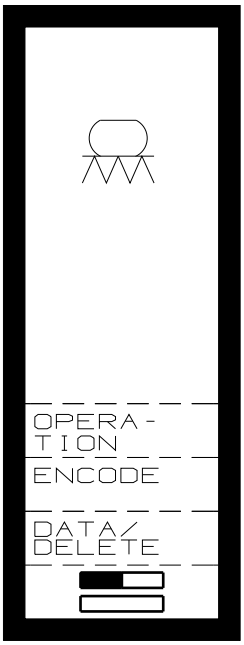


Select another sprayer type by pressing “SELECT TYPE” then move the cursor to the required type and press the “SELECT” key.

The 2 programs look the same, but the Holder program contains certain settings that can only be used with the Holder sprayer. It is therefore **important** that “Other Type” is selected for any other sprayers.

As the 2 programs look the same, the following describes the “Other Type” sprayer.

SPRAYER (OTHER TYPE)



It is now possible to select between the following functions:

OPERATION

ENCODE

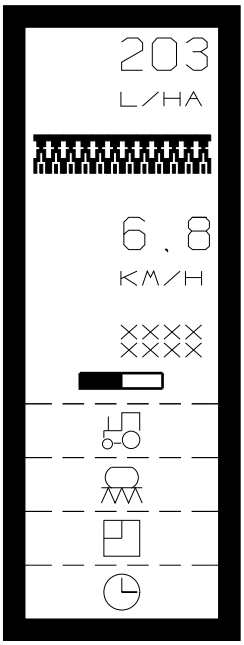
DATA/DELETE

TASK OPERATION

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

SPRAYER OPERATION

Once the 2 status screens, that show all the encodements, have been accepted, the following is displayed:



APPLICATION RATE:

The primary function under sprayer is application.

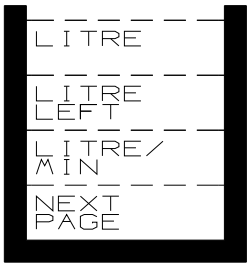
The application rate is shown in litres per hectare based on the flow through the flow meter and the area meter (speed and working width). So driving forward or speed simulation and flow through the flow meter is necessary to get a reading.

NB: The correct flow figure, forward speed calibration and the correct working width are important to gain the correct application rate.

FORWARD SPEED:

The forward speed is displayed with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar)

SPRAYER FUNCTIONS:



LITRE: The amount of chemical consumed in litres.

LITRE LEFT: Litres left in the tank (the amount filled must be encoded before starting).

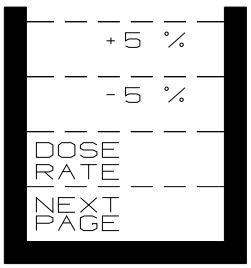
LITRE/MIN: Litres per minute.

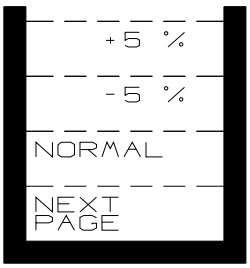
LITRE: Consumed litres since starting. This function works as a trip counter. The amount can be deleted in **DATA/DELETE** where a total counter can also be found.

LITRE LEFT: The amount of chemical left in the tank. Presupposes that the amount filled in is encoded before starting. If the optional filling flowmeter is used, then this is automatic. Litre left is also used for checking and calibrating the flowmeter (see page 3.**Error! Unknown switch argument.**).

LITRE/MIN: Litres per minute through the flowmeter. Should not be confused with the pump capacity.

Pressing the **"NEXT PAGE"** key displays the next functions.





+XX% Step dosage, increase.

-XX% Step dosage, decrease.

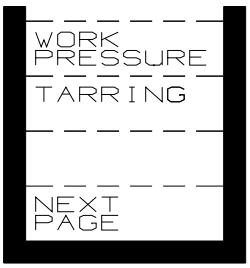
DOSE RATE/NORMAL
Encoding the required application rate or return to normal after using the step key.

+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile decrease of the encoded application rate. The size of the steps is altered in encode.

DOSE RATE/ NORMAL: This key has 2 functions – DOSE RATE or NORMAL.

The primary function of the key is DOSE RATE; the required application rate can be encoded by pressing this key.
If the application has been increased/decreased using the step function, then "NORMAL" appears and the key will return the application rate to normal.
Pressing "NORMAL" once will return the application rate to normal regardless of how much the application rate has been increased/decreased.



WORK PRESS: The working pressure of the sprayer in BAR with 1 decimal (optional pressure sensor must be fitted).

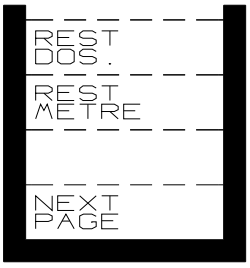
TARRING: Zero setting the pressure sensor.

WORK PRESS: Pressing this key displays the sprayers pressure in BAR with 1 decimal.
The pressure sensor's maximum pressure must be set in "**ENCODE**".

TARRING: Pressing this key defines the zero point for the pressure sensor.

NOTE: This key must only be used when the sprayer has absolutely no pressure. The displayed pressure will be incorrect if this key is pressed at any other time.

Pressing the **"NEXT PAGE"** key displays the next functions.



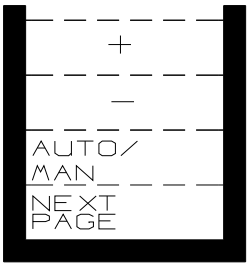
REST DOS: Rest dosage using the amount in the sprayer.

REST METRE: Remaining distance with the amount in the sprayer.

REST DOSAGE: Displays the application rate needed to finish the field with the chemical remaining in the tank. Calculated from the amount left in the tank and the remaining area.

REST METRE: Displays the distance that can be travelled using the chemical remaining in the tank with the present application rate.

Pressing the **"NEXT PAGE"** key displays the next set of functions.



AUTO/ MAN: Automatic or manual application.

+: Increase the application rate (only displayed if **"MAN"** is selected).

-: Decrease the application rate (only displayed if **"MAN"** is selected).

AUTO/ MAN: Pressing this key selects automatic or manual application. If manual operation is selected, **"MAN"** flashes in the lower part of the screen and **+** and **–** appear as function keys.

+: Increased application. The application rate is increased as long as this key is pressed. The speed at which the application rate increases depends on the speed of the regulating system's operating speed (only displayed if **"MAN"** is selected).

-: Decreased application. The application rate is reduced as long as this key is pressed. The speed at which the application rate decreases depends on the speed of the regulating system's operating speed (only displayed if **"MAN"** is selected).

Pressing the **"NEXT PAGE"** key displays the first set of functions.

EXTRA TRACTOR FUNCTIONS IN THE SPRAYER PROGRAM

METRE IN TRACK: Distance driven in the present tramline.

METRE = Distance driven.

METRE START/ METRE STOP = Manual start and stop of the distance counter.

METRE IN TRACK

Distance driven in the current tramline. This function is used to, after refilling, find the precise position in the tramline at which the sprayer ran empty. This function works in conjunction with "REDUCE TRACK M", which appears when the sprayer is switched off. This function works in the following way:

Each time the sprayer is switched on again when starting a new tramline the "METRE IN TRACK" counter starts from 0.

The computer remembers how far in the tramline has been driven, if the sprayer is shut somewhere in the middle of the track. The function "REDUCE TRACK M" is now displayed.

NOTE: Once the sprayer has been shut in the tramline, do not open the sprayer again before the sprayer is full and the computer is ready as follows:

Fill the sprayer again and drive to the start of the last tramline that was partially sprayed.

Press "REDUCE TRACK M" and drive down the tramline. An alarm will sound and "SPRAYER SOON TO BE OPENED" will be displayed 5 metres before the sprayer should be opened. When the tractor reaches the position at which the sprayer should be opened again, the computer will give another audible warning and "START SPRAYING NOW" will appear on the display. The alarm will continue until the sprayer is opened.

METRE

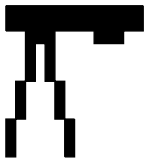
The distance driven in metres. Measured from the selected speed sensor and can be started/stopped manually or with the override sensor. Select how in encode under "METRE SWITCH".

Or

METRE START/METRE STOP

Manual start or stop of the metre counter. These function keys appear instead of “METRE” when manual control of the metre counter is selected.

BOOM SECTION ON/OFF

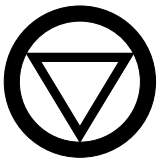


The picture to the left shows a sprayer with 2 sections, where one is open and one is closed. The total number of boom sections is set under encode.

I

When the area override sensor is activated (not counting area) **“I”** is displayed and all boom sections will disappear.

FILLING FUNCTION



Pressing the Hold key selects the filling function. The amount to be filled in the sprayer can be seen.

FILL VOLUME: The amount to be filled in to the sprayer, calculated from **LITRE LEFT**, **HA LEFT**, **TANK VOLUME** and the required application rate.

FILLED VOLUME: The amount metered by the flowmeter.

LITRE LEFT: Calculated **LITRE LEFT** in the sprayer.

NOTE: If the calculated LITRE LEFT is not the same as the actual amount left in the sprayer, then the sprayer flowmeter should be calibrated.

CALC. VOLUME: Fill volume is calculated when this key is pressed.

START FILLING: Pressing this key starts filling and the amount is metered through the filling flowmeter.

FLOW FIGURE: This value is the calibration figure for the filling flowmeter. (Filling flowmeter)

CALIBRATING THE FILLING FLOWMETER:

It is necessary to calibrate the filling flowmeter before it can be used accurately. Using the program in the TeeJet 5000 for calibration makes this process easy. The accuracy of this calibration depends on the amount that is used for calibration. The following example uses 1000 lt.

1. Press the **"FLOW FIGURE"** key in the under-menu.
2. Check that a flow figure has been encoded; if not then encode e.g. 5000 as a start figure.
3. Press the return key to go back to the previous screen.
4. Encode an amount in **"FILL VOLUME"** that is approx. twice as much as you expect to fill into the tank.
5. Select **"START FILLING"** in the under-menu.
6. Fill the sprayer with an exact known amount, through the filling flowmeter (1000 Lt. In this example).
   Fill the sprayer under normal working conditions (same pressure, time, etc).
7. Select **"FLOW FIGURE"** again, move the cursor to **"TANK LIT"** and encode the exact known amount that was filled in to the sprayer (1000 Lt. In this example)
8. Press the flashing **"CALC. FLOW"** and the flow figure is automatically calculated.

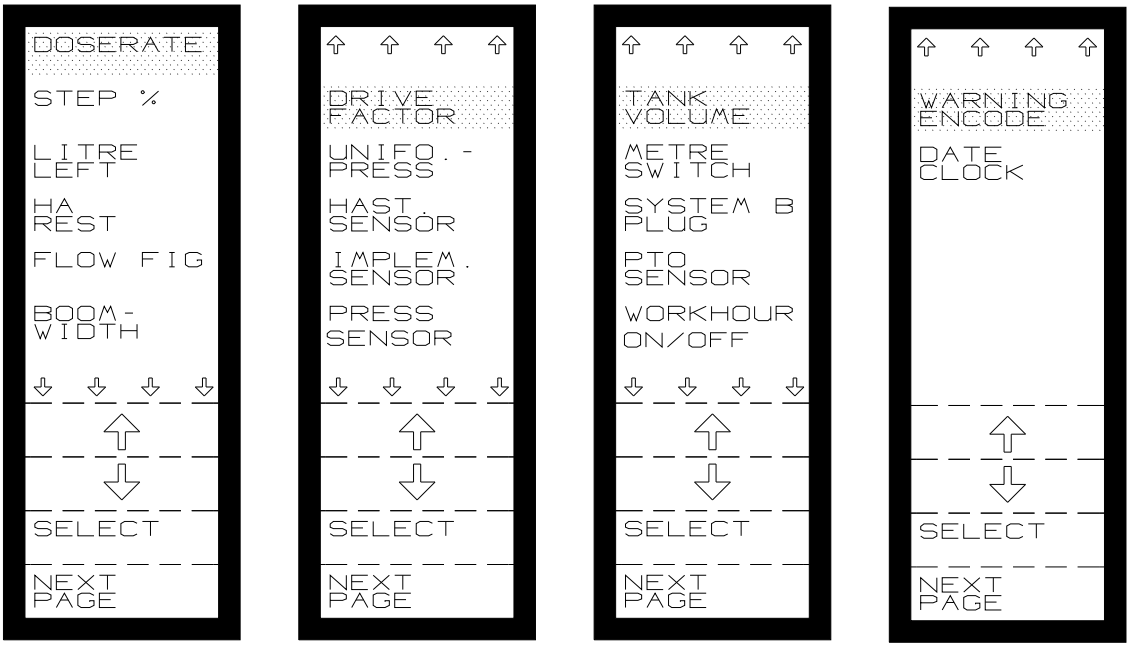
FILL MODE: You can select whether a valve stops filling or whether a horn is blown when the correct amount has been filled into the sprayer.

Pressing the **RETURN** key brings the sprayer menu back.

SPRAYER ENCODE

This menu allows the operator to encode the various settings that are necessary for spraying. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.



DOSERATE

Encode the required application rate here if automatic rate control equipment is fitted to the sprayer, or if you want an alarm to sound with incorrect application rates. The application rate is encoded in whole litres per hectare. The maximum application rate that can be encoded is 9999 l/ha.

NOTE: The required application rate can also be encoded in the "SPRAYER OPERATION" screen.

STEP%

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

LITRE LEFT

To see how much is left in the tank, the amount filled must be encoded here.

If there is some liquid left in the tank before filling, then this amount must be added to the amount filled thus:

Amount left in tank + filled amount = Litre left.

NOTE: LITRE LEFT is calculated automatically if a filling flowmeter is fitted.

HA LEFT

Encode the size of the field to be sprayed here. END TIME, REST DOS., REST METRE and FILL VOLUME are calculated from this encodement.

FLOW FIGURE

This figure is the calibration figure for the flowmeter. For normal flowmeters (20-200 l/min) encode a value of 2000. See the recommend flow figure for other flowmeters.

CALIBRATION:

Use a “start value” of 2000 as the flow figure.

Method 1: (automatic).

1. Fill the sprayer with min. 600 litre (the more the better).
2. Encode the filled amount in **“LITRE LEFT”**.
3. Spray a minimum of 500 litre (spray with all boom sections open in the normal pressure range).
4. Read the amount left in the tank using the sight gauge on the sprayer.
5. Encode the above amount left in the tank in **“TANK LIT”**.
6. Press the flashing **“CALC: FLOW”** key.
7. The new flow figure has now been calculated.

NOTE: Greater accuracy can be achieved by weighing the sprayer before and after spraying or by conducting a jug test and comparing the flow in L/MIN.

Pressing the flashing **“CALC. FLOW”** key will always calculated a new flow figure.

Method 2: (Manual):

1. Fill in min. 600 litres (the more the better).
2. Zero the **LITRE** counter in **DATA/DELETE**.
3. Spray 500 litres.
4. Read the consumed amount on the indicator on the tank.
5. Read the **LITRE** counter in **DATA/DELETE**.
6. Insert the values in the following formula:

$$\textbf{NEW FLOW FIGURE} = \frac{\text{Old flow figure x Amount sprayed}}{\text{Read litre counter (TeeJet 5000)}}$$

Encode this new value as the new flow figure.

NOTE: Check this calibration at regular intervals if the sprayer is fitted with a standard TeeJet AGRO paddlewheel flowmeter.

This check is always easy with the TeeJet 5000, as the amount sprayed should be the same as what the TeeJet 5000 displays.

Changing the paddlewheel in the flowmeter is recommend every other year.

BOOM WIDTH

The working width for the sprayer. If the sprayer is fitted with control valves for each individual boom section (boom compensation), then encode each boom section by itself (starting from the left). Encode otherwise the whole boom as 1 section (all other sections as 0).

Operation:

Move the cursor to the section to be encoded/changed and encode the section width with the numeric keypad.

DRIVE FACTOR:

The speed at which the regulating valve adjusts to the correct position. Min. 1, Max. 500. Normal = 100.

REGULATION DELAY

Encode the number of seconds that regulation is delayed by after the main valve is opened. It is possible to encode from 0 to 9 seconds.

UNIFO. PRESS:

Select **"ON"** if the sprayer is fitted with uniform pressure valves, **"OFF"** if not.

NOTE: Remember to adjust the uniform pressure valves.

SPEED SENSOR (KM/H)

There are 3 different speed sensors to choose from in the TeeJet 5000 v. 4 (if fitted).

WHEEL TRACTOR:

Speed sensor fitted on the tractor. The sensor can be built into the tractor's gearbox or rear axle as standard factory fitted or be retrofit on a wheel or drive shaft.

NOTE: Wheelslip will give inaccurate speed-readings.

WHEEL SPRAYER:

Speed sensor fitted to trailed sprayers. This type of sensor will, as a rule, give a very accurate speed-reading.

RADAR:

Signal from a radar, fitted on the tractor. This type of sensor gives a very accurate speed reading on hard surfaces, but a high crop and reflecting surfaces (water) gives an inaccurate reading. This type of sensor is not recommended for spraying.

Please refer to chapter 2 for speed sensor calibration

IMPLEMENT SENSOR

This sensor starts and stops area measurement. This should be connected to the main valve on sprayers. Select **"SPRAYER"** under encode.

If a PTO RPM sensor has been fitted then this can be used, select **"PTO"**.

PRESSURE SENSOR

Encode the maximum working pressure for the fitted pressure sensor. This maximum Pressure is normally printed on the pressure sensor. Zero setting the pressure sensor (tarring) can be done under both “OPERATION” and “ENCODE”.

TANK VOLUME

Encode the sprayer’s tank volume when using the optional filling equipment.

METRE SWITCH

Select whether the metre counter is to be started and stopped manually **“MANUAL”** or via the implement sensor **“IMPLEM. SENSOR”**.

SYSTEM B PLUG

There are 2 system plugs on the back of the TeeJet 5000.

The System **A** plug is compatible with *older* TeeJet 5000 versions.

The System **B** plug is for **new** connections.

ACTIVE 0 VOLT:	Boom sections are opened with 0V.
ACTIVE 12 VOLT:	Boom sections are opened with 12V.
ON/OFF:	**ON:** The System **B** plug is used.
	OFF: The System **B** plug is **not** used.

PTO SENSOR

Encode the number of pulses the PTO sensor sends per revolution (encode 1 if the TeeJet PTO sensor kit is used).

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

WARNINGS

The following warning can be set in this menu:

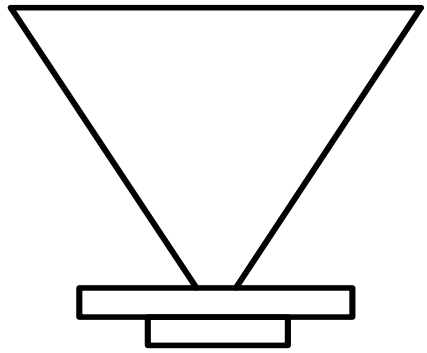
PTO:	Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.
KM/H:	Warning **ON/OFF** and **MAX/MIN**-limits for speed.
SLIP:	Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.
MIS DOSE:	Warning **ON/OFF** and **MAX-**deviation in **+/-%.**
LITRE LEFT:	Warning **ON/OFF** and amount of litres (min.) at which warning is wanted.
WORK. PRESS.:	Warning **ON/OFF** and **MAX/MIN**-limits for the working pressure of the sprayer.
NB:	It is recommended to turn all warnings, which are not wanted "**OFF**".

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

Fertiliser distributor

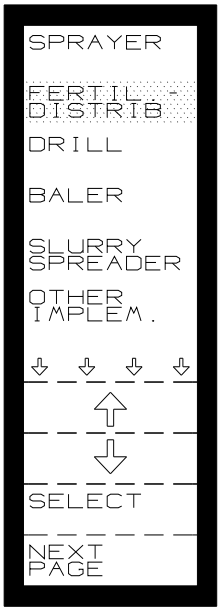


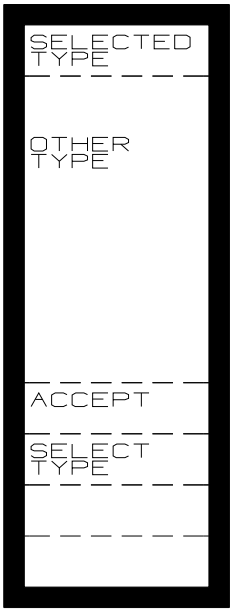
FERTILISER DISTRIBUTOR, OTHER TYPE 4.1
FERTILISER DISTRIBUTOR, OTHER TYPE WITH REG. 4.13
FERTILISER DISTRIBUTOR, BØGBALLE (D, E, DZ & EX) 4.23
FERTILISER DISTRIBUTOR, BREDAL (B2, B3, B4 & B6) 4.35
FERTILISER DISTRIBUTOR, BREDAL (HYDR. B) 4.47
FERTILISER DISTRIBUTOR, BREDAL (HYDR. K) 4.61
FERTILISER DISTRIBUTOR, BREDAL K RAMP 4.75
FERTILISER DISTRIBUTOR, RAUCH AERO 4.89
FERTILISER DISTRIBUTOR, RAUCH BETA/DELTA 4.101
FERTILISER DISTRIBUTOR, RAUCH AXERA H 4.113
FERTILISER DISTRIBUTOR, REIβL 4.125

Fertiliser distributor, Other Type

FERTILISER DISTRIBUTOR 4.2
FERTILISER DISTRIBUTOR OPERATION (OTHER TYPE) 4.3
FERTILISER DISTRIBUTOR FUNCTIONS: 4.3
1. WEIGHING. (DIRECT WEIGHING WITH WEIGH CELLS). 4.3
2. PULSE WEIGHING 4.6
3. 2 RPM SENSORS 4.6
BOOM SECTION ON/OFF 4.7
FERTILISER DISTRIBUTOR ENCODE 4.7
HA LEFT: 4.8
WEIGHING: 4.8
WEIGHING: 4.8
PULSE WEIGHING: 4.8
RPM 2: 4.9
DISTRIBUTOR WIDTH 4.10
FORWARD SPEED SENSOR 4.10
WHEEL TRACTOR 4.10
WHEEL SPREADER 4.10
RADAR 4.10
IMPLEMENT SENSOR 4.10
METRE SWITCH 4.10
SYSTEM B PLUG 4.11
WORK HOUR ON/OFF 4.11
REVS. SENSOR 4.11
WARNING ENCODE 4.12
DATE - CLOCK: 4.12

FERTILISER DISTRIBUTOR



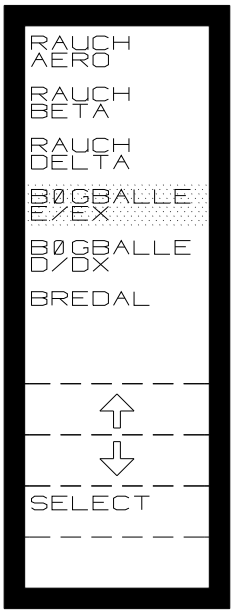


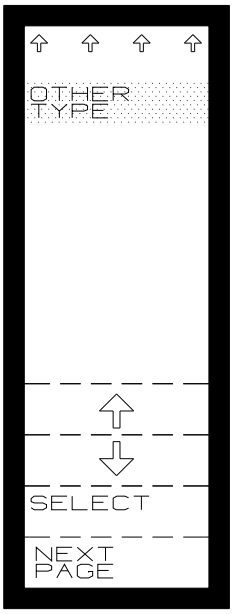
Select fertiliser distributor from the main menu as follows:

1. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.

2. Main menu
   – select fertiliser distributor.

3. **"ACCEPT"** or **"SELECT TYPE"**.



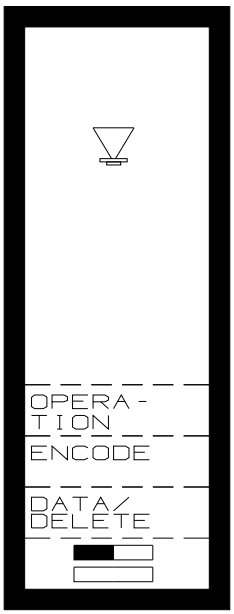


4. Select type.

5. It is now possible to choose between the displayed types.

6. Select fertiliser distributor type.

7. Accept type



It is now possible to select between the following functions:

OPERATION

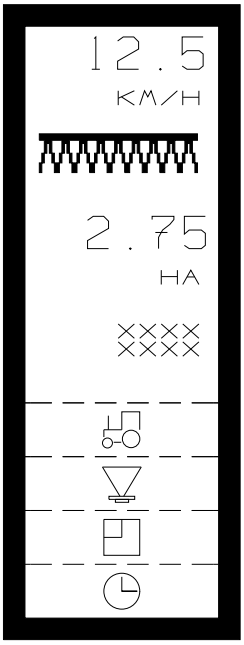
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FERTILISER DISTRIBUTOR OPERATION (OTHER TYPE)



FORWARD SPEED:

The primary function under fertiliser distributor is forward speed.

Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel spreader or radar).

APPLICATION RATE IN KG/HA:

When “WEIGHING” or “PULSE WEIGHING is selected, area measurement is displayed.

AREA MEASUREMENT:

The worked area is displayed in Ha. Area is displayed with 2 decimals from 0 to 99.99 ha. And thereafter with 1 decimal from 100 to 999.0 ha.

NOTE: A total counter for area can also be found in “DATA/DELETE”

FERTILISER DISTRIBUTOR FUNCTIONS:

Three different function sets can be displayed in this menu

The following can be selected in **“ENCODE”**:

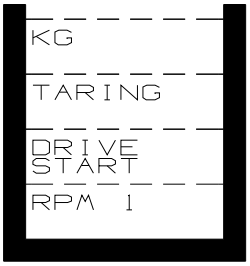
WEIGHING

PULSE WEIGHING

RPM 2

The function sets for each possibility are described in the following:

1. WEIGHING. (DIRECT WEIGHING WITH WEIGH CELLS).



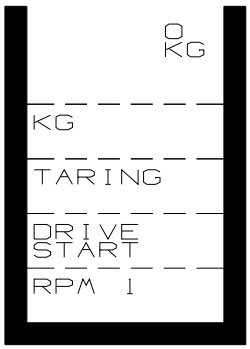
KG: Fertiliser consumption in KG.

TARRING: Tarring the weigh cell(s).

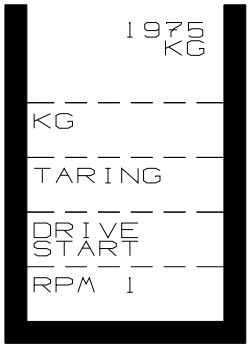
DRIVE START: Pressing this key stores the present weight in the TeeJet 5000’s memory.

RPM 1: Revolutions per minute.

TARRING:



1. Press **"TARRING"** with an empty fertiliser distributor, the displayed **"KG"** will change to 0.



2. Fill the spreader and the weight will be displayed

Using weighing:

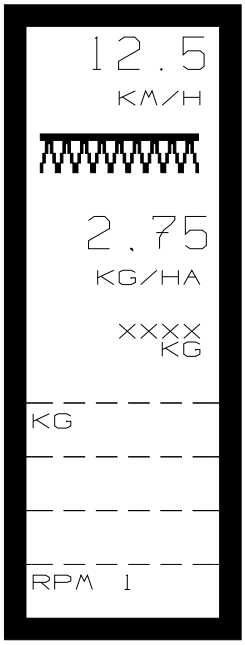
There are 2 possibilities:

Start spreading with the weight displayed, and at each weighing the amount left in the spreader can be seen.

Each time **"TARRING"** is pressed; the displayed KG will be 0. It is now possible to see how much has been used (negative weighing). It is ***not*** possible to see how much fertiliser is left in the spreader.

NOTE: The actual weight is stored in the memory when **"DRIVE START"** is pressed. This value is used together with area measurement to calculate **KG/HA.**

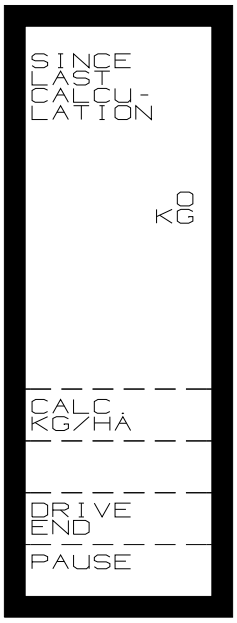
The accuracy of this calculation depends on the amount of fertiliser spread since the last calculation, **the larger the amount the better the accuracy.**



Stop driving and stop the spreader. When you are ready to start spreading, press **"DRIVE START"** and start spreading until 10% of the hopper size has been spread.

NOTE: If you start spreading ***without*** pressing **"DRIVE START"** a warning will be displayed. You must now stop spreading and wait 8 seconds, press **"DRIVE START"** again.

After stopping the following will be displayed:



CALC. KG/HA:

Pressing this key calculates the application rate since the last calculation. It is possible to continue weighing/spreading once this key has been pressed.

DRIVE END:

Press this key when you have stopped spreading or when the spreader is to be filled. The application rate since the last calculation is calculated when this key is pressed. The amount is also registered in the KG+ counter.

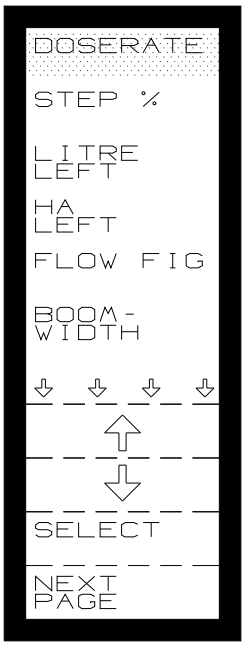
If the task function is being used, then the consumed amount will be stored in the task that was opened before spreading commenced.

PAUSE:

Pressing the **"PAUSE"** key allows a pause in spreading and stops the "beeps" from the computer. It is possible to start spreading again at anytime.

2. PULSE WEIGHING

Metering the amount spread using pulses from a spreader fitted with feed roller.



KG: The amount spread in KG.

KG LEFT: The amount left in the spreader.

RPM 1: Shaft speed for axle no. 1.

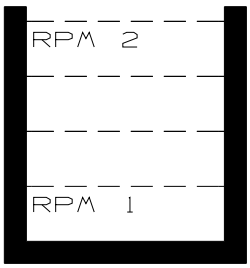
KG: The amount spread metered from a pulse generator fitted to the feed roller. Presupposes system calibration (amount per pulse).

KG LEFT: The amount left in the spreader. Presupposes encodement of the amount filled into the spreader before spreading starts (encode).

RPM 1: Shaft speed for axle no.1.

3. 2 RPM SENSORS

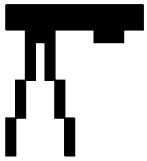
If the spreader is not fitted with either weigh cells or pulse generators, then the TeeJet 5000 can display the shaft speed for another axle instead of KG metering.



RPM 1: Shaft speed for axle no. 1.

RPM 2: Shaft speed for axle no. 2.

BOOM SECTION ON/OFF



The picture to the left shows a spreader with 2 sections, where one is open and one is closed. The total number of sections is set under encode.

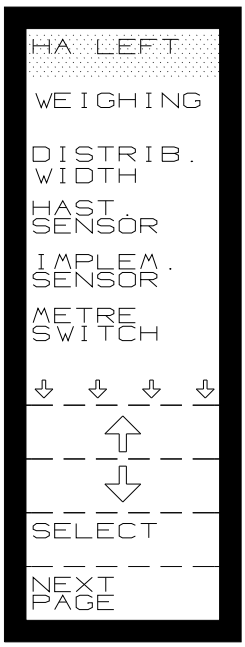
I

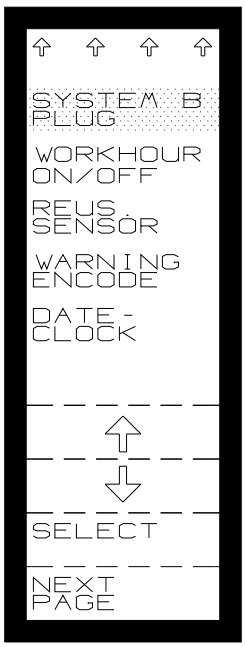
When the area override sensor is activated (not counting area) **"I"** is displayed and all sections will disappear.

FERTILISER DISTRIBUTOR ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.





KG LEFT:

This function is only available if "PULSE WEIGHING" has been selected

The amount filled into the spreader must be encoded here; to be able to see how much fertiliser is left in the hopper.

NOTE: If there is some fertiliser left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. left.

HA LEFT:

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

WEIGHING:

Selecting this gives 3 options:

WEIGHING: **Direct weighing using weigh cells.**

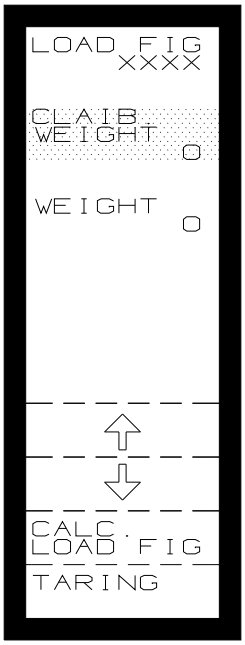
PULSE WEIGHING: **Amount metering using pulse generators.**

RPM 2: **Shaft speed for axle no. 2.**

The selected option is displayed at the top of the screen above a broken line.

WEIGHING:

The weigh system ***must*** be calibrated if this option is selected:



1. Press **"CALIB. CALC."** And the picture to the left is displayed.
2. Press **"TARRING"** with an empty spreader to zero set the weight.
3. Fill the spreader with a known amount. As large an amount as possible gives the best result, must be min. 50% of the spreader's capacity.
   Move the cursor to **"CALIB. WEIGHT"**, and encode the amount filled into the spreader using the numerical keypad.
4. Press the flashing **"CALC. LOAD FIG"** key. The system is calibrated. The calculated **LOAD FIGURE** is shown at the top of the screen, note this figure if the system is also used with other weigh cells.

NOTE: Check the weigh cell's calibration at regular intervals.

PULSE WEIGHING:

Pulse weighing, measure the amount spread by metering the speed of an axle that is related to the amount spread.

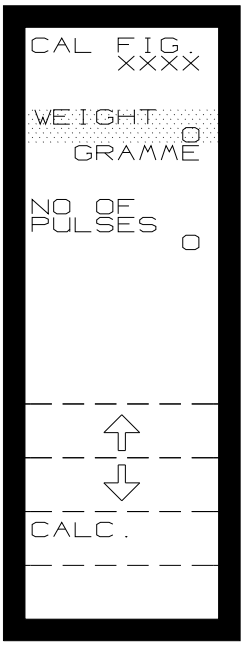
To ensure an accurate reading, the system must be calibrated. This calibration can be done automatically or manually.

Automatic calibration:

This calibration takes place at the same time as the normal fertiliser spreader calibration. The principle is, that the computer counts the number of pulses from the pulse generator whilst calibrating. When the spreader has been calibrated, the amount weighed is encoded and the computer calculates the amount spread per pulse.

Method:

Prepare the fertiliser distributor for calibration.



1. Select **"PULSE WEIGHING"** and then press **"CALIB. CALC."** The picture to the left is displayed.
2. **"NO. OF PULSES"** must be at 0 before the calibration procedure commences. If this is not the case then press the return key and then re-enter the calibration screen. Continue calibrating the spreader.
3. Weigh the amount released, move the cursor to **WEIGHT** using the arrow keys. Encode the amount released in grams using the numerical keypad.

   NOTE: The pulse counter ***must*** have counted a number of pulses.
4. Press the flashing **"CALC."** key and the calibration procedure is finished. The **CAL FIGURE** is displayed at the top of the screen. Note this figure if the system is used with other pulse weighing systems.

Manual (calculated) calibration figure:

This method is especially good for spreaders that control the application rate by controlling the speed of a feed roller that gives an exact amount per revolution. The calibration figure is calculated as follows on such spreaders:

$$\textbf{CALIBRATION FIGURE} = \frac{\textbf{Volume per revolution x volume weight}}{\textbf{Pulses per revolution}}$$

Encode the calculated figure as the calibration figure using the numerical keypad.

RPM 2:

If neither **"WEIGHING"** OR **"PULSE WEIGHING"** are used, then the shaft speed of axle no. 2 can be monitored (axle no. 1 is always displayed).

Pressing the **"RPM 2"** key, allows the numbers of pulses per revolution to be encoded.

DISTRIBUTOR WIDTH

The working width for the spreader. If the spreader is fitted with individual sections, then encode each section by itself (starting from the left). Otherwise encode the width as 1 section (all other sections as 0).

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 fertiliser distributor program (Other type) gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for fertiliser spreading.

WHEEL SPREADER

If the spreader is fitted with a speed sensor, press the **"WHEEL SPREADER"** key. The TeeJet 5000 will now receive speed signals from the sensor fitted to the spreader, and gives, as a rule, a very accurate speed-reading.

RADAR

Working in crops that are blowing in the wind or working in areas with surface water can affect the accuracy of the radar, we recommend using a speed sensor fitted to the tractor or spreader under these circumstances.

Please refer to chapter 2 for speed sensor calibration

IMPLEMENT SENSOR

Using 1 of the following 3 options, select how the area counter is to be switched on and off:

1. **LIFT**
2. **FERTILISER DISTRIBUTOR**
3. **PTO**

The selected sensor is shown at the top of the display.

METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

SYSTEM B PLUG

There are 2 system plugs on the back of the TeeJet 5000.

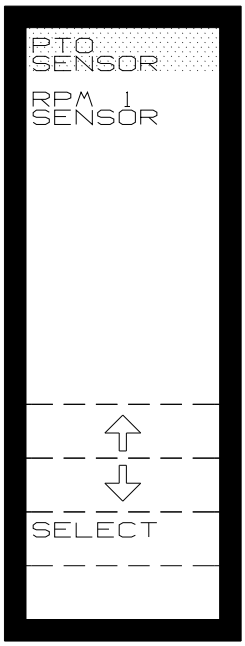
The System **A** plug is compatible with *older* TeeJet 5000 versions.
The System **B** plug is for **new** connections.

ACTIVE 0 VOLT: The individual sections are opened with 0V.
ACTIVE 12 VOLT: The individual sections are opened with 12V.
ON/OFF: **ON:** The system **B** plug is ***used***.
OFF: The system **B** plug is ***not used***.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR



Encode the number of pulses per revolution given for the individual sensors.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

KG LEFT: Warning **ON/OFF** and amount of kg (min.) at which warning is wanted (this warning is only available if **PULSE WEIGHING** has been selected).

RPM 1: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.

RPM 2: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM (only available if **RPM** has been selected).

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

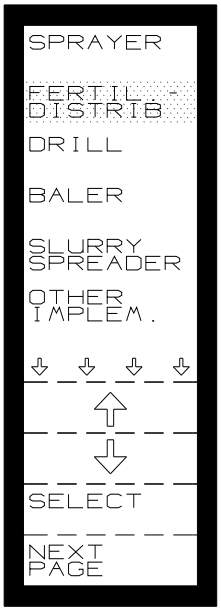
Set the date and time in this menu:

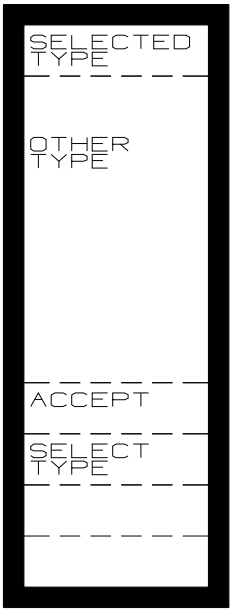
HOURS - MINUTES - YEAR - MONTH - DAY.

Fertiliser distributor, Other type with reg.

FERTILISER DISTRIBUTOR 4.14
FERTILISER DISTRIBUTOR OPERATION 4.15
FERTILISER DISTRIBUTOR FUNCTIONS: 4.15
SECTION ON/OFF: 4.16
FERTILISER DISTRIBUTOR ENCODE 4.17
DOSE RATE 4.17
KG LEFT 4.17
HA LEFT 4.17
CALIBRATION 4.18
DISTRIBUTOR WIDTH 4.19
STEP% 4.19
DRIVE FACTOR 4.19
UNIFORM PRESSURE 4.19
PULS/REV. 4.19
FORWARD SPEED SENSOR 4.20
WHEEL TRACTOR: 4.20
WHEEL SPREADER: 4.20
RADAR: 4.20
IMPLEMENT SENSOR 4.20
WORK HOUR ON/OFF 4.20
METRE SWITCH 4.20
SYSTEM B PLUG 4.21
WARNING ENCODE 4.21
DATE – CLOCK 4.21

FERTILISER DISTRIBUTOR



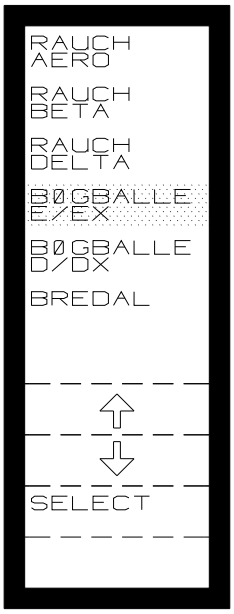


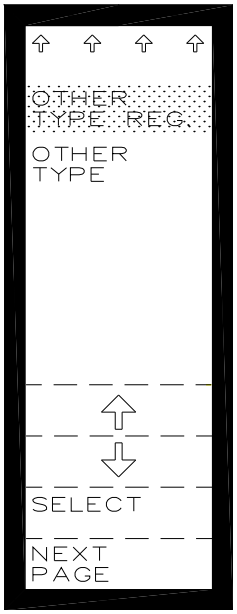
Select fertiliser distributor from the main menu as follows:

1. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.

2. Main menu
   – select fertiliser distributor.

3. **"ACCEPT"** or **"SELECT TYPE"**.



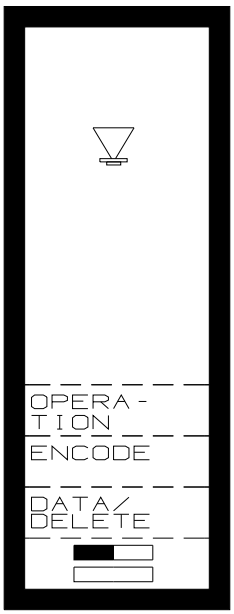


4. Select type.

5. It is now possible to choose between the displayed types.

6. Select fertiliser distributor type.

7. Accept type



It is now possible to select between the following functions:

OPERATION

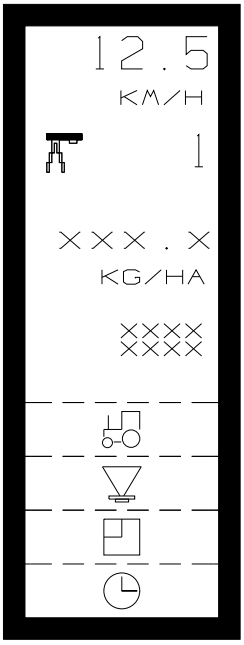
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FERTILISER DISTRIBUTOR OPERATION



FORWARD SPEED:

The primary function under fertiliser distributor is forward speed.

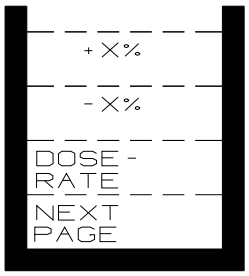
Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel spreader or radar).

APPLICATION RATE IN KG/HA:

The present application rate in Kg/ha. Calculated from the number of pulses from the floor chain and area measurement (speed and working width). It is therefore necessary to drive and spread at the same time to get a reading for this function.

NOTE! Correct calibration of forward speed and weight per pulse plus correctly entered working width are essential for accurate operation.

FERTILISER DISTRIBUTOR FUNCTIONS:



+XX%: Step dosage. Increase.

-XX%: Step dosage. Reduction.

DOSE RATE/ NORMAL: Encoding the required application rate or return to normal after using the step key.

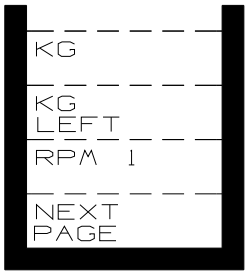
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step function has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next functions.



KG: Consumption in Kg since the last reset in DATA/DELETE.

KG LEFT: KG remaining in the hopper (amount filled must be encoded before start).

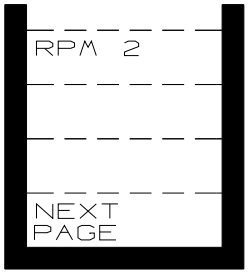
RPM 1: Shaft speed of axle 1.

KG: Kg consumed, measured via the pulse generator on the sow axle. This function presupposes correct calibration of the system (amount per pulse).

KG LEFT: The amount remaining in the hopper. Presupposes encoding the amount filled before start (done in encode).

RPM 1: Shaft speed of axle no. 1.

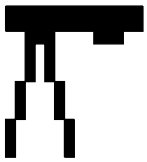
Pressing the **"NEXT PAGE"** key displays the last available functions.



RPM 2: Shaft speed of axle no. 2 (sow axle).

Pressing the **"NEXT PAGE"** key displays the first available functions.

SECTION ON/OFF:



The picture to the left shows a spreader with 2 sections encoded, where one is open and one is closed. The total number of sections is set under encode.

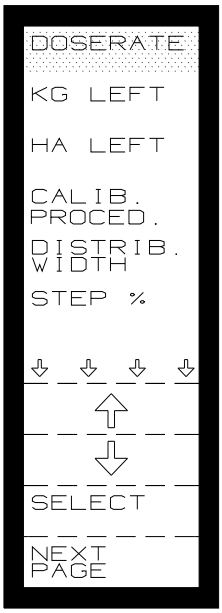
I

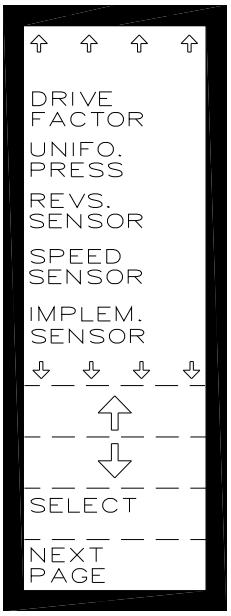
When the area override sensor is activated (not counting area) **"I"** is displayed and all sections will disappear.

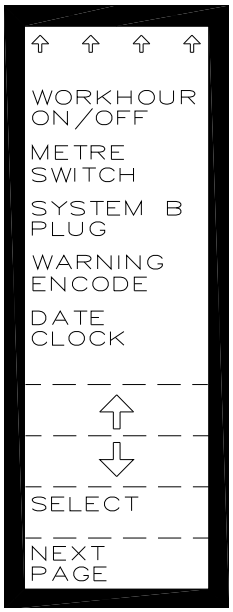
FERTILISER DISTRIBUTOR ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.







DOSE RATE

The required application rate is encoded in **KG/HA**.

KG LEFT

The amount filled into the hopper must be encoded here; to be able to see how much fertiliser is left in the hopper.

NOTE! If there is some fertiliser left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. Left.

HA LEFT

Encode the size of the field to be spread here. END TIME is calculated from this encodement.

CALIBRATION

Particular attention must be paid to the calibration procedure, as this is the basis for correct operation.

The amount is measured via a pulse generator mounted on the sow axle.

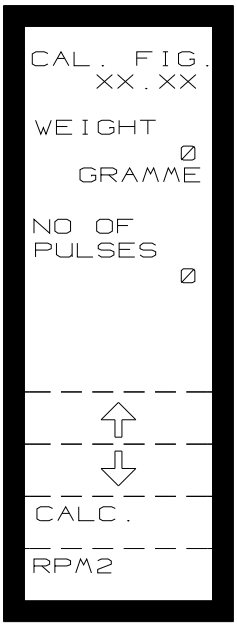
The system must be calibrated to ensure correct operation. There are 2 methods available to find the calibration figure, an automatic method and a manual method.

Automatic calibration:

This calibration procedure is carried out at the same time as the normal spreader calibration. The principle works by counting the number of pulses given from the sensor during spreader calibration. When the calibration is finished the amount released is weighed and encoded, the computer can now calculate the amount released per pulse.

Procedure:

Prepare the spreader for calibration.



1. The picture to the left is displayed when **CALIB. PROCED.** has been selected.
2. NO OF PULSES must be 0 before the calibration procedure is continued. If the number is higher then press the RETURN key and select CALIB. PROCED. again.
3. Pressing the **"RPM 2"** key allows you to adjust the speed of the motor that drives the regulating device, pressing the **"+"** key increases the chain speed and pressing **"-"** reduces the chain speed. The speed of the floor chain is displayed.
4. Set the chain speed to 0 using the **"-"** key when a suitable amount has been released and press **"OK"**. Move the cursor to WEIGHT and encoded the amount released using the numerical keys.
   NOTE! *The pulse counter must have counted a number of pulses*.
5. Press the flashing **"CALC."** Key and the calibration procedure is finished. The CAL. FIG., which is displayed at the top of the screen, can be noted.

Manual calibration:

The CAL. FIG. Can be calculated manually as follows:

$$\textbf{CALIBRATION FIGURE} = \frac{\textbf{Volume per revolution x volume weight}}{\textbf{Pulses per revolution}}$$

NOTE!

If after some time it is found that the total amount spread is not the same as the computer has calculated, check the machine's settings, that the calibration and encodements are correct.

If all the encodements are correct the following can be done:

If the fertiliser being used has been stored for a long time, or is damper or drier than normal then these conditions can vary from the time of calibration to the present.

This can be changed by altering the encoded/calculated CAL. FIG. by the amount in percent that the present application varies from the required application.

Lower CAL. FIG. = higher application

DISTRIBUTOR WIDTH

The working width for the spreader used. Each spreader section is encoded individually in centimetres (section 1 is the left-hand side of the machine).

NOTE! All unused sections must be encoded as 0.

The total working width can be seen at the bottom of the display whilst encoding.

STEP%

Encode the size of the steps for the "STEP%" function. This % value is the same for both + and -. The maximum step size is 99%.

DRIVE FACTOR

The speed at which the regulating system adjusts to the correct position. Min. = 1 and Max. = 500. Normal = 100.

If the regulation system adjusts to the correct application rate too slowly, then the drive factor should be increased. If the system is constantly searching up & down for the correct application rate then reduce the drive factor.

UNIFORM PRESSURE

Only used if the spreader can be split into sections.

If regulation is required when one or more sections are closed then uniform pressure should be set to **OFF**. If no regulation is required when one or more sections are closed then set uniform pressure to **ON**.

PULS/REV.

Encode the number of pulses per revolution for the RPM 2 sensor (sow axle).

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 fertiliser distributor program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR:

Speed sensor fitted on the tractor. The sensor can be built into the tractor's gearbox or rear axle as standard factory fitted or be retrofit on a wheel or drive shaft.

NOTE: Wheelslip will give inaccurate speed-readings.

WHEEL SPREADER:

Speed sensor fitted to trailed spreaders. This type of sensor will, as a rule, give a very accurate speed-reading.

RADAR:

Signal from a radar, fitted on the tractor. This type of sensor gives a very accurate speed reading on hard surfaces, but a high crop and reflecting surfaces (water) can give an inaccurate reading.

Please refer to chapter 2 for speed sensor calibration.

IMPLEMENT SENSOR

The implement sensor (area override) is the sensor that starts and stops the area counter. There are 3 possibilities in this program:

LIFT

FERTILISER DISTRIBUTOR

PTO

The selected sensor is displayed on the screen.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

METRE SWITCH

Select whether the distance counter is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

SYSTEM B PLUG

There are 2 system plugs on the back of the TeeJet 5000.

The System **A** plug is compatible with *older* TeeJet 5000 versions.
The System **B** plug is for **new** connections.

ACTIVE 0 VOLT:	The individual sections are opened with 0V.
ACTIVE 12 VOLT:	The individual sections are opened with 12V.
ON/OFF:	**ON:** The system **B** plug is ***used***.
	OFF: The system **B** plug is ***not used***.

WARNING ENCODE

The following warnings can be set in this menu:
It is recommended to turn all warnings, which are not wanted “OFF”.

PTO:	Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.
KM/H:	Warning **ON/OFF** and **MAX/MIN**-limits for speed.
SLIP:	Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.
MIS-DOSERATE:	Warning **ON/OFF** and MAX difference in **+/-%**
KG LEFT:	Warning **ON/OFF** and amount of Kg (min.) at which warning is wanted.
RPM 1:	Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.
NB:	The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1.

DATE – CLOCK

Set the date and time in this menu:

HOURS – MINUTES – YEAR – MONTH – DAY.

Fertiliser distributor, Bøgballe (D, E, DZ & EX)

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BØGBALLE FERTILISER DISTRIBUTOR 4.25
FERTILISER DISTRIBUTOR OPERATION 4.26
FERTILISER DISTRIBUTOR FUNCTIONS 4.26
- START AND STOP SPREADING 4.27
- BOOM SECTION ON/OFF 4.27

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- DOSERATE: 4.28
  - CALIBRATION 4.29
  - ACTUATOR CALIBRATION 4.30
- KG/LEFT: 4.31
- HA LEFT 4.31
- DISTRIBUTOR WIDTH 4.31
- STEP %: 4.31
- FORWARD SPEED CALIBRATION 4.32
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  - RADAR 4.32
  - WHEEL SPREADER 4.32
- IMPLEMENT SENSOR 4.32
- METRE SWITCH 4.32
- WORK HOUR ON/OFF 4.32
- REVS. SENSOR 4.33
- WARNING ENCODE 4.33
- DATE - CLOCK: 4.33

INTRODUCTION

The **TeeJet 5000 BØGBALLE** Fertiliser distributor program.

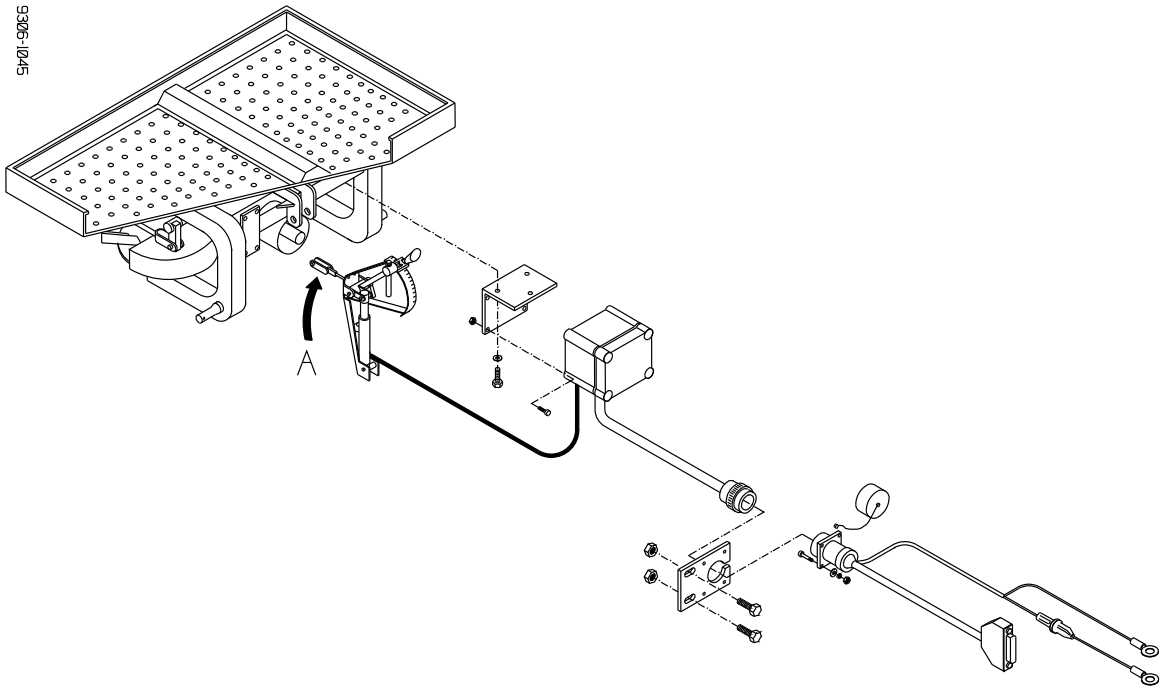
Maintain the correct application rate regardless of forward speed, plus the ability to alter the application rate in steps depending on the crop's requirement.

The **TeeJet 5000** controls the application rate using an actuator to control the gate position on the fertiliser spreader, constant adjustment to maintain the application rate.

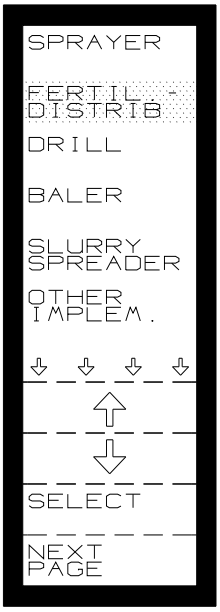
Visible and audible warnings given for incorrect rates, forward speed, PTO, KG left, etc.

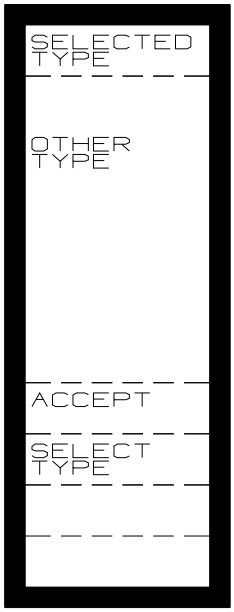
NOTE: The computer must be calibrated with the spreader to ensure correct operation.

This calibration must take place the first time the computer is connected to the spreader and each time the computer is connected to another spreader.



BØGBALLE FERTILISER DISTRIBUTOR



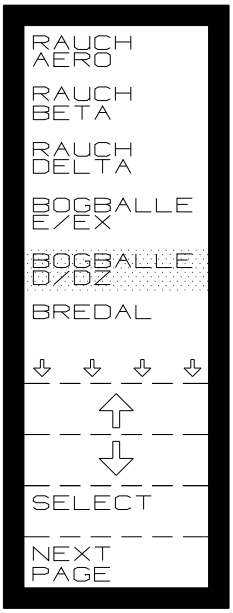


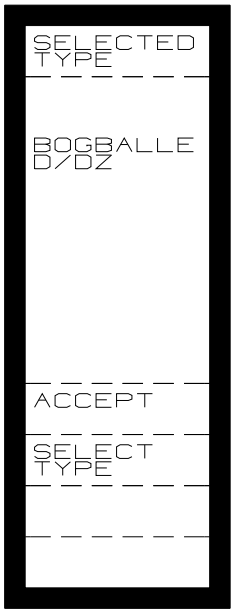
Select fertiliser distributor from the main menu as follows:

1. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.

2. Main menu
   – select fertiliser distributor.

3. **"ACCEPT"** or **"SELECT TYPE"**.



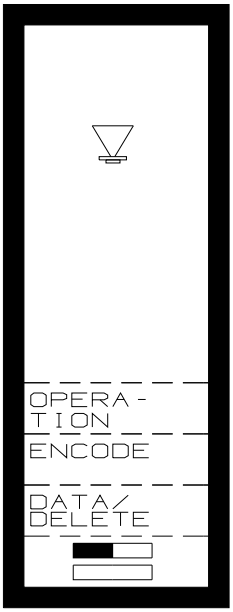


4. Select type.

5. It is now possible to choose between the displayed types.

6. Select fertiliser distributor type.

7. Accept type



It is now possible to select between the following functions:

OPERATION

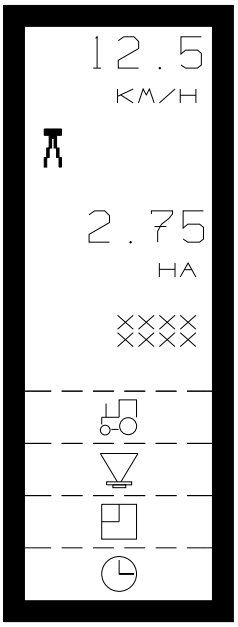
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FERTILISER DISTRIBUTOR OPERATION



FORWARD SPEED:

The primary function under fertiliser distributor is forward speed.

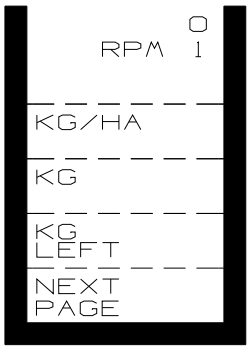
Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar).

AREA MEASUREMENT:

The worked area is displayed in Ha. Area is displayed with 2 decimals from 0 to 99.99 ha. And thereafter with 1 decimal from 100 to 999.0 ha.

NOTE: a total counter for area can also be found in **"DATA/DELETE"**

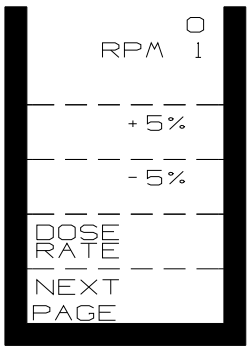
FERTILISER DISTRIBUTOR FUNCTIONS



KG/HA: Application rate in KG/HA.

KG: Fertiliser consumption in Kg.

KG LEFT: Total KG remaining in the hopper (the amount must be encoded before start).



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

DOSE RATE: Encoding the required application rate or return to normal after using the step key.

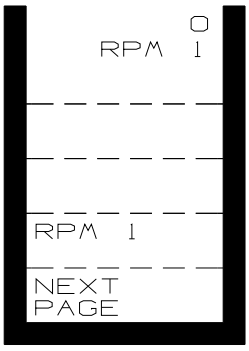
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step feature has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

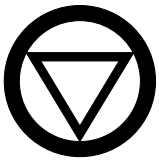
DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next functions.



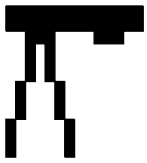
RPM 1: Shaft speed of axle 1.

START AND STOP SPREADING



Pressing this key starts and stops the fertiliser spreader.

BOOM SECTION ON/OFF



The picture to the left shows a spreader with 2 sections, where one is open and one is closed. The total number of sections is set under encode.

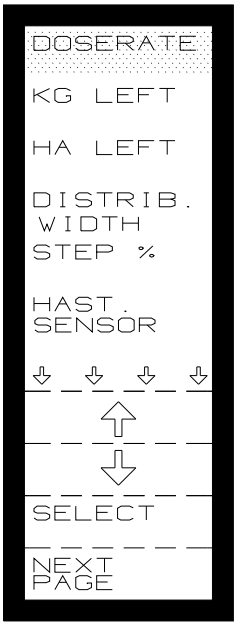
I

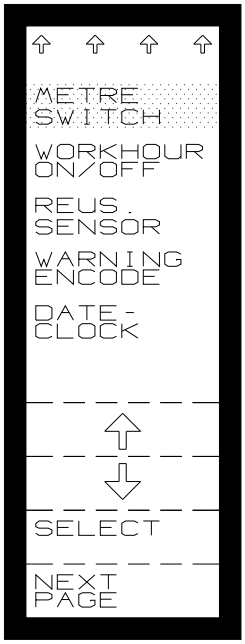
When the area override sensor is activated (not counting area) **"I"** is displayed and all sections will disappear.

FERTILISER DISTRIBUTOR ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.





DOSERATE:

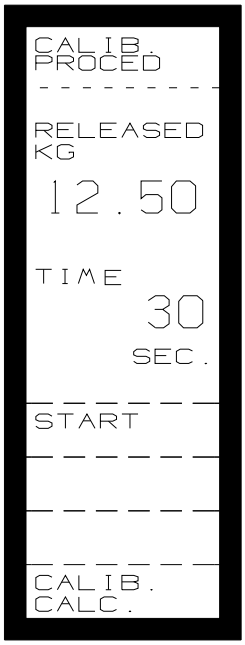
Encode the effective working width before encoding the application rate.

The required application rate is encoded in **KG/HA**.

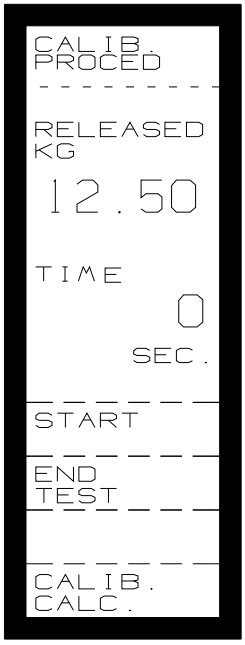
CALIBRATION

Calibrating the spreader is imperative for correct operation of the automatic control function. Great attention must, therefore, be paid to this calibration procedure.

CALIBRATION PROCEDURE



1. Fit the calibration equipment to the right-hand side of the spreader.
2. Fill the right-hand hopper with approx. 200 kg. fertiliser.
3. Run the PTO at 200 – 250 RPM
4. Press the **"CALIB: PROCED"** key and the picture to the left is displayed.



5. Press the **"START"** key and the spreaders handle opens automatically.
6. The handle will open to 4.5 for the E and EX models, and 3.5 for the D/DZ models.
7. After 30 seconds the handle will close, and the amount released can be weighed.
8. Encoded the amount released in "RELEASED KG" and press the **"END TEST"** key, the spreader is calibrated.
9. Remove the calibration equipment from the spreader.

NOTE: The encoded amount released is saved when the **"END TEST"** key is pressed.

This calibration procedure should be carried out for each new batch of fertiliser and each time the fertiliser type is changed to ensure accurate operation.

NOTE:

If, after some time, the amount spread is not the same as the amount calculated by the monitor, check if the machine's setup, the amount released and the encodements are correct.

If the above is correct then the following can be done:

If the fertiliser being used has been stored for a long time then the fertiliser could be damper or drier than when the spreader was calibrated, these conditions can affect the accuracy of the system.

This can be corrected by altering the amount released by the same percent that the amount spread deviates from the required amount.

Lower released KG = higher application rate

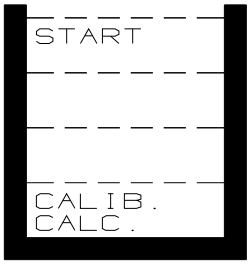
ACTUATOR CALIBRATION

The spreader's actuator and the TeeJet 5000 must be setup together. Calibrating the system does this. Calibrate the system at regular intervals, i.e. each time the spreader has been disconnected from the computer.

Before calibration:

The handle's stop ***must*** be set and tightened exactly on the scale's last figure.

Ensure that the handle stop cannot move whilst calibrating.



CALIBRATING:

1. Press the **"CALIB.CALC."** key for min. **3 seconds**, this moves the handle to the open position then back to the closed position.

Control

To ensure that the actuator and computer are calibrated correctly, perform a "release test" with an empty hopper.

The handle should open to 4.5 for the E and EX models, and 3.5 for the D/DZ. models.

NOTE: It may be necessary to repeat the actuator calibration a few times if the actuator has been removed to achieve the correct position during a "release test".

KG/LEFT:

The amount filled into the spreader must be encoded here; to be able to see how much fertiliser is left in the hopper.

NOTE: If there is some fertiliser left in the hopper before refilling, then this amount must be added to the amount filled thus:

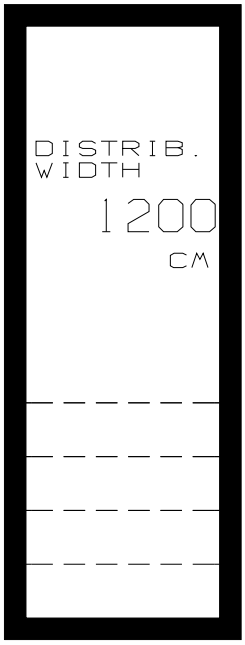
Amount left in hopper + filled amount = Kg. left.

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

DISTRIBUTOR WIDTH

The effective spreading width of the spreader.



Method:

1. Press the **"DISTRIB. WIDTH"** key and the picture to the left is displayed.

2. Encode the effective spreading width using the numerical keypad.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

FORWARD SPEED CALIBRATION

The TeeJet 5000 V.4 fertiliser distributor program (Bøgballe) gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for fertiliser spreading

RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar.

IMPORTANT! Working in crops that are blowing in the wind or working in areas with surface water can affect the accuracy of the radar, we recommend using a speed sensor fitted to the tractor under these circumstances.

WHEEL SPREADER

If the spreader is fitted with a speed sensor, press the **"WHEEL SPREADER"** key. The TeeJet 5000 will now receive speed signals from the sensor fitted to the spreader.

IMPLEMENT SENSOR

Using 1 of the following 3 options, select how the area counter is to be switched on and off:

LIFT

FERTILISER DISTRIBUTOR

PTO

The selected sensor is shown at the top of the display.

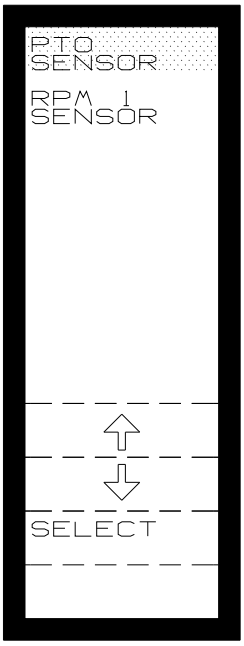
METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR



PTO SENSOR: If the TeeJet PTO sensor kit is used (932-983) encode 1.

RPM 1 SENSOR:

The Bøgballe kit can be extended with a RPM sensor on the spreader discs. The pulses/rev. Should be set to 1.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

KG LEFT: Warning **ON/OFF** and amount of kg (min.) at which warning is wanted.

RPM 1: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1.

NOTE! ALARM DOSE RATE:

When the spreader handle goes bellow 1.5 or when the application rate/forward speed are such that the handle goes above the max. On the scale, an alarm will sound. **This alarm cannot be switched off!**

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

Fertiliser distributor, Bredal (B2, B3, B4 & B6)

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BREDAL FERTILISER DISTRIBUTOR 4.37
FERTILISER DISTRIBUTOR OPERATION 4.38
FERTILISER DISTRIBUTOR FUNCTIONS: 4.38
- CLOSING THE GATE 4.40
- SECTION ON/OFF: 4.40

FERTILISER DISTRIBUTOR ENCODE 4.40
- DOSERATE: 4.41
- KG/LEFT: 4.43
- HA LEFT 4.43
- WEIGHING 4.43
- DISTRIBUTOR WIDTH: 4.44
- STEP %: 4.44
- FORWARD SPEED SENSOR 4.45
- IMPLEMENT SENSOR 4.45
- METRE SWITCH 4.45
- WORK HOUR ON/OFF 4.45
- REVS. SENSOR 4.46
- WARNING ENCODE 4.46
- DATE - CLOCK: 4.46

INTRODUCTION

The **TeeJet 5000 BREDAL** fertiliser distributor program.

Maintain the correct application rate regardless of forward speed, plus the ability to alter the application rate in steps depending on the crop's requirement.

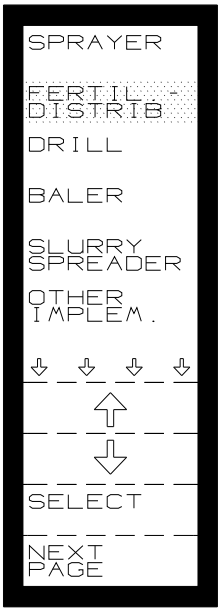
The **TeeJet 5000** controls the application rate using an actuator to control the gate position on the fertiliser spreader, constant adjustment to maintain the application rate.

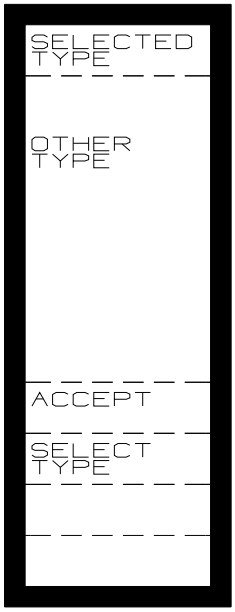
Visible and audible warnings given for incorrect rates, forward speed, PTO, KG left, etc.

NOTE: The computer must be calibrated with the spreader to ensure correct operation.

This calibration must take place the first time the computer is connected to the spreader and each time the computer is connected to another spreader.

BREDAL FERTILISER DISTRIBUTOR



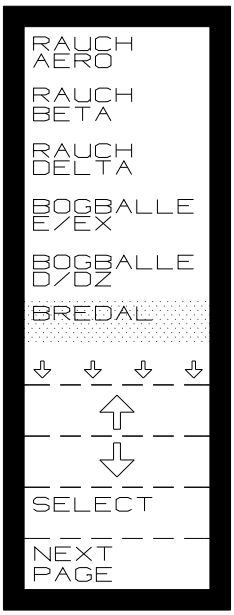


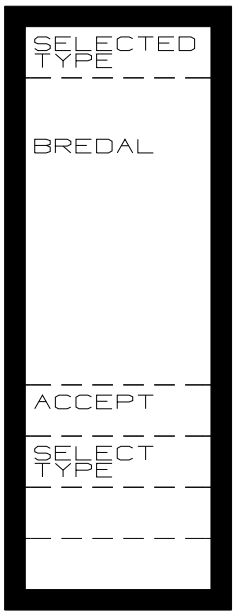
Select fertiliser distributor from the main menu as follows:

1. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.

2. Main menu
   – select fertiliser distributor.

3. **"ACCEPT"** or **"SELECT TYPE"**.



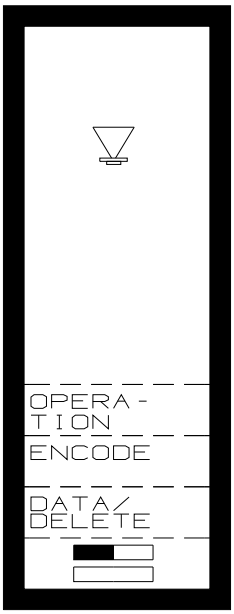


4. Select type.

5. It is now possible to choose between the displayed types.

6. Select fertiliser distributor type.

7. Accept type



It is now possible to select between the following functions:

OPERATION

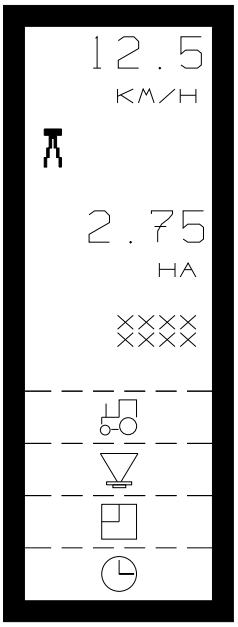
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FERTILISER DISTRIBUTOR OPERATION



FORWARD SPEED:

The primary function under fertiliser distributor is forward speed.

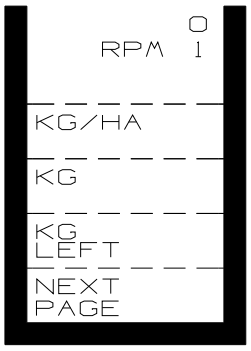
Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar).

AREA MEASUREMENT:

The worked area is displayed in Ha. Area is displayed with 2 decimals from 0 to 99.99 ha. And thereafter with 1 decimal from 100 to 999.0 ha.

NOTE: a total counter for area can also be found in **"DATA/DELETE"**.

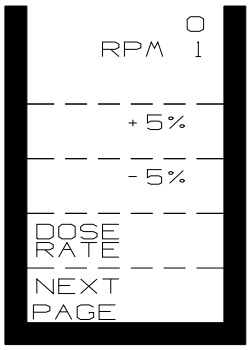
FERTILISER DISTRIBUTOR FUNCTIONS:



KG/HA: Application rate in KG/HA.

KG: Fertiliser consumption in Kg.

KG LEFT: Total KG remaining in the hopper (the amount must be encoded before start).



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

DOSE RATE: Encoding the required application rate or return to normal after using the step key.

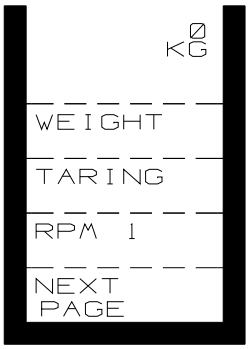
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step feature has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next functions.



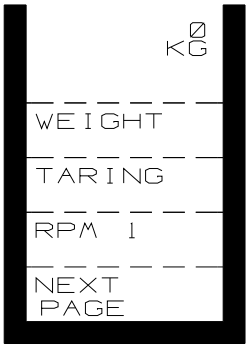
WEIGHT: Weighing in KG using weigh cells fitted on the spreader.

TARRING: Tarring the weigh cells.

RPM 1: Shaft speed of axle 1.

Using weighing (if the system is fitted with weigh cells).

Calibrating the weigh cells is a condition for correct operation. The calibration procedure is described under **"ENCODE"**.



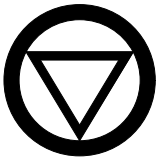
Press **"TARRING"** whilst at a standstill, **"WEIGHT"** will change to 0, which is the same as **0 KG**.

There are 2 possibilities:

Start spreading with the weight displayed, and at each weighing the amount left in the spreader can be seen.

Each time **"TARRING"** is pressed; the displayed KG will be 0. It is now possible to see how much has been used (negative weighing). It is ***not*** possible to see how much fertiliser is left in the spreader.

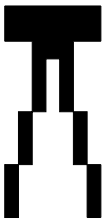
CLOSING THE GATE



This key is used to close the gate on the Bredal spreader, i.e. driving on the road.

This function ***must*** only be used when the belt has stopped (override sensor is active). The gate will open automatically when spreading starts again.

SECTION ON/OFF:



This picture is displayed during spreading.

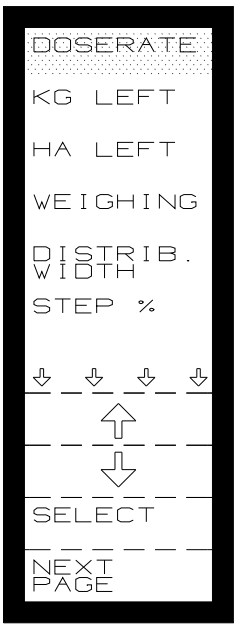
I

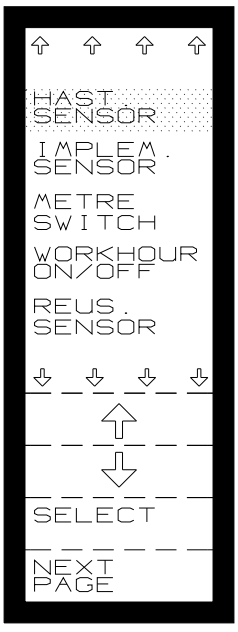
When the area override sensor is activated (not counting area) **"I"** is displayed and all sections will disappear.

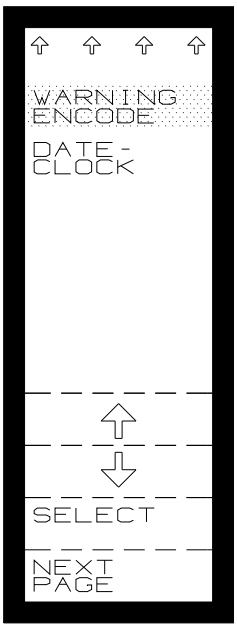
FERTILISER DISTRIBUTOR ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

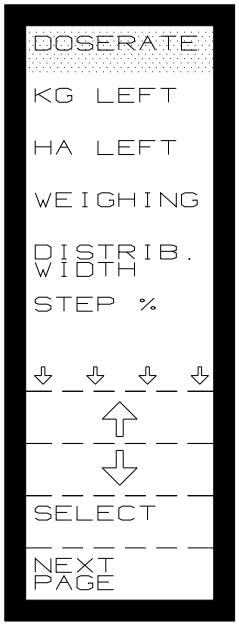
Always check these encodements in the status screen each time you change implements.







DOSERATE:

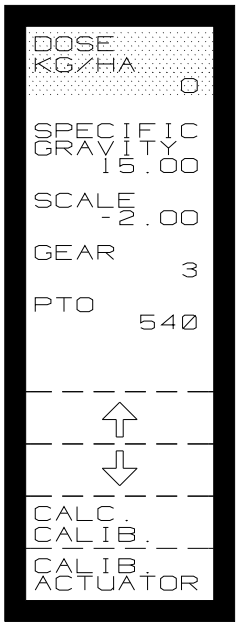


The effective spreader width must be encoded under **"DISTRIB: WIDTH"** ***before*** **"DOSE RATE"** is selected.

Some spreaders are fitted with a ½ gear. It is possible to change the calculated gear by pressing the **"GEAR+"** key. A new calculation ***must*** take place after changing the gear, if the calculated scale is greater than 300, then GEAR+ must be changed again.

Refer to the documentation supplied with the spreader for further information.

The required application rate and spreader settings are encoded as follows:



1. The required application rate is encoded by moving the cursor to **"DOSE KG/HA"**. Use the numerical keypad.

2. Encode the specific gravity found using the specific gravity tester from Bredal.

3. Pressing **"CALC. CALIB"** calculates the settings for **scale, gear** and **PTO**.

When **DOSERATE** has been selected the screen cannot be left until **"CALIB.CALC"** has been pressed.

The required application rate together with the specific gravity and the working width gives:

Scale setting

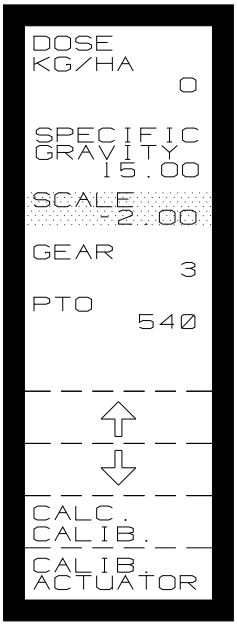
The correct gear on the spreader

PTO revolutions

Minimum RPM for the RPM 1 alarm

WARNING: These settings ***must*** therefore be calculated again, each time the spreader width is changed.

Newer spreaders:



If the spreader used is not appropriate with the spreader table programmed into the computer, it is possible to encode the scale settings using the spreader table supplied with the spreader.

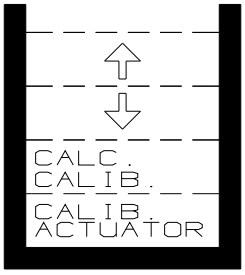
Scale setting encodement is done as follows:

Read the settings from the table supplied with the spreader.

Encode the effective spreader width under **"DISTRIB. WIDTH"**.

Select **"DOSERATE".** Encode the specific gravity as 0.00 and the scale setting can be encoded using the numerical keypad.

ACTUATOR CALIBRATION



The system comprising of the computer and an actuator must be calibrated to fit the spreader. This calibration must be done at regular intervals during the season, i.e. each time the spreader is connected to the computer.

Before calibration:

Move and tighten the scale stop to its ***highest*** setting.

Ensure that the scale stop ***cannot*** move during the calibration procedure.

CALIBRATION:

Select **"DOSERATE"** and press the **"CALIB. ACTUATOR"** key for approx. 3 seconds, this will make the actuator move the gate from closed to open and then open to closed.

NOTE: It may be necessary to repeat the actuator calibration a few times if the actuator has been removed to achieve the correct position during a "release test".

KG/LEFT:

The amount filled into the spreader must be encoded here; to be able to see how much fertiliser is left in the hopper.

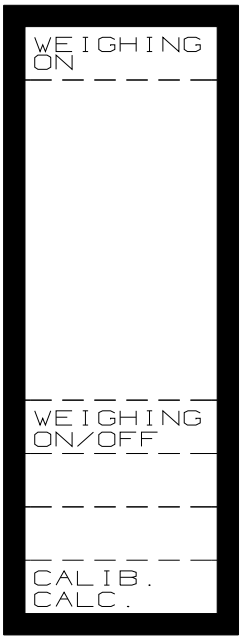
NOTE: If there is some fertiliser left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. left.

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

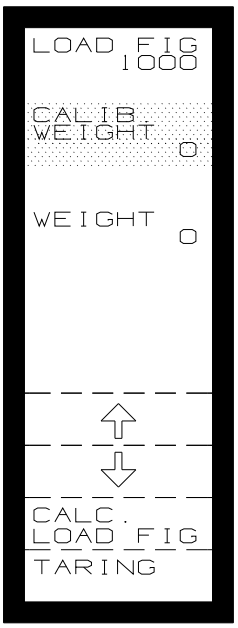
WEIGHING



If the spreader is equipped with weigh cells, then set weighing to **ON** otherwise set this to **OFF**.

WEIGHING ON:

If this function is required then the weighing system ***must*** be calibrated, this is done as follows:

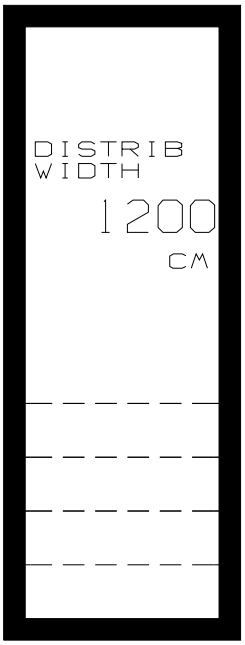


1. Press the **"CALIB. CALC"** key and the picture to the left is displayed.
2. With an empty spreader press the **"TARRING"** key to zero set the weigh cells.
3. Fill the spreader with an exact known amount. The weight should be as large as possible, but ***must*** be minimum 50% of the spreaders capacity.
   Using the arrow keys, move the cursor to **"CALIB. WEIGHT"**, and encode the amount filled with the numerical keypad.
4. Press the flashing **"CALC. LOAD FIG"** key. The system has now been calibrated. The calculated figure is displayed at the top of the screen, note this figure if the system is to be used with other weigh cells in the future.

NOTE: The weigh cell calibration should be checked at regular intervals.

DISTRIBUTOR WIDTH:

The effective spreading width of the spreader.



Method:

1. Press the **"DISTRIB. WIDTH"** key and the picture to the left is displayed.
2. Encode the effective spreading width using the numerical keypad.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

FORWARD SPEED SENSOR

A speed sensor is fitted to the spreader, this sensor gives the correct number of pulses for controlling the application rate, and this sensor should be selected.

If forward speed measurement is not required from the sensor mounted on the spreader, WHEEL TRACTOR or RADAR can be selected.

Please refer to chapter 2 for forward speed sensor calibration

IMPLEMENT SENSOR

Using 1 of the following 3 options, select how the area counter is to be switched on and off:

LIFT

FERTILISER DISTRIBUTOR

PTO

The selected sensor is shown at the top of the display.

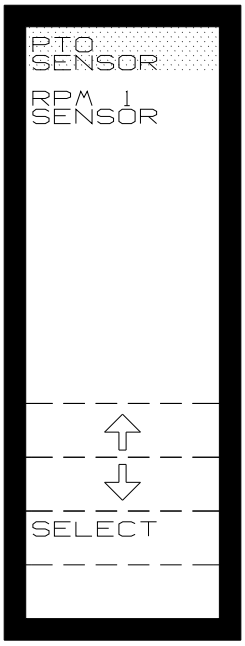
METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR



PTO SENSOR:

If the TeeJet PTO sensor kit is used (932-983) encode 1.

RPM 1 SENSOR:

The Bredal kit is supplied with a sensor fitted for disc speed, the number of pulses per revolution should be set to 1.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

KG LEFT: Warning **ON/OFF** and amount of kg (min.) at which warning is wanted.

RPM 1: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

Fertiliser distributor, Bredal (HYDR. B)

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INTRODUCTION

TeeJet 5000 used to control the **BREDAL B** fertiliser spreader.

- Maintain the correct application rate regardless of forward speed, plus the ability to alter the application rate in steps depending on the crop's requirement.

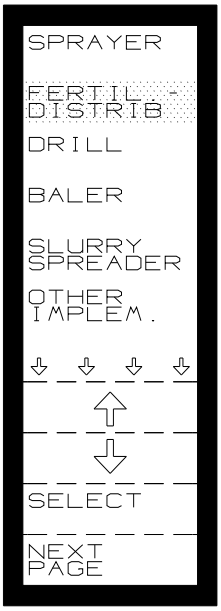
- The **TeeJet 5000** controls the application rate using a proportional valve that adjusts the amount of oil to a hydraulic pump, which in turn alters the belt speed.

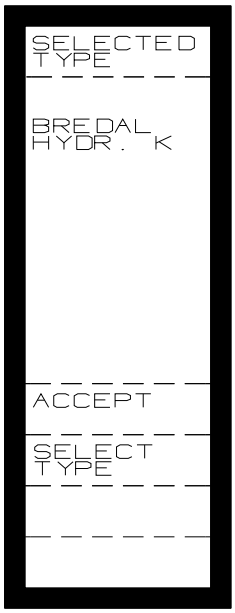
- Visible and audible warnings given for incorrect rates, forward speed, PTO, KG left, etc.

NOTE: The computer must be calibrated with the spreader to ensure correct operation.

This calibration must take place the first time the computer is connected to the spreader and each time the computer is connected to another spreader.

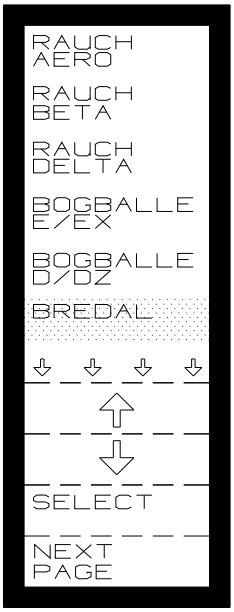
BREDAL'S FERTILISER SPREADER





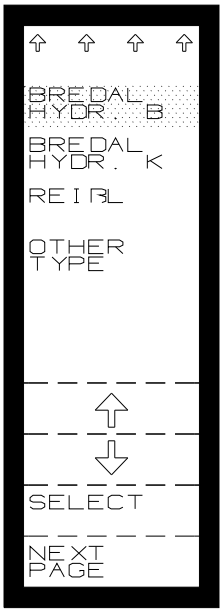
Select fertiliser distributor from the main menu as follows:

1. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.



2. Main menu

3. select fertiliser distributor.

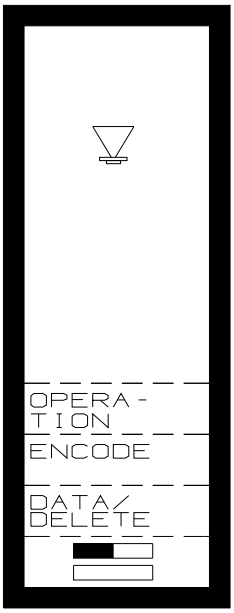


4. **"ACCEPT"** or **"SELECT TYPE"**.

5. Select type.

6. It is now possible to choose between the displayed types.

7. Select fertiliser distributor type.



8. Accept type

It is now possible to select between the following functions:

OPERATION

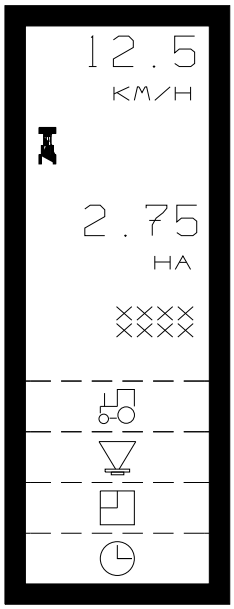
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FERTILISER SPREADER OPERATION



FORWARD SPEED (KG/MIN):

The primary function under fertiliser distributor is forward speed.

Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar).

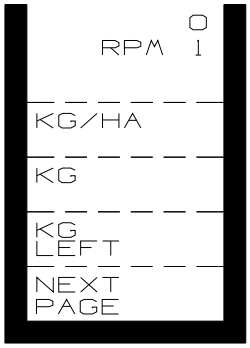
KG/MIN is displayed if “MAN” has been selected under “AUTO/MAN” in encode.

AREA MEASUREMENT:

The worked area is displayed in Ha. Area is displayed with 2 decimals from 0 to 99.99 ha. And thereafter with 1 decimal from 100 to 999.0 ha.

NOTE: a total counter for area can also be found in **“DATA/DELETE”.**

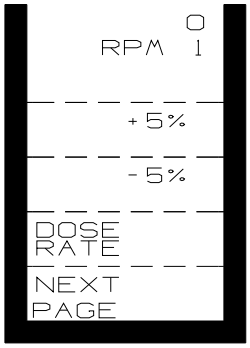
FERTILISER SPREADER-FUNCTIONS:



KG/HA (RPM 1): Application rate in KG/HA. (The shaft speed from sensor fitted to the spreader if “MAN” has been selected under encode)

KG: Fertiliser consumption in kg.

KG LEFT: Kg remaining in the hopper (the amount must be encoded before starting).



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

DOSE RATE NORMAL: Encoding the required application rate or return to normal after using the step key.

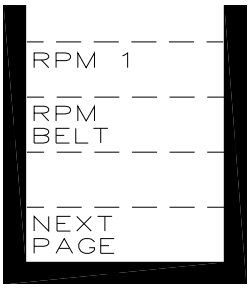
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step feature has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

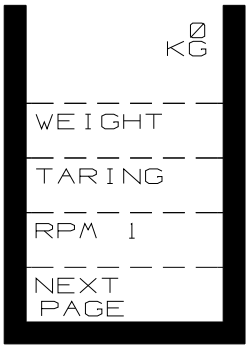
Pressing the **"NEXT PAGE"** key displays the next functions.



RPM 1: Weighing in KG using weigh cells fitted on the spreader (only displayed if WEIGHING ON is selected under encode).

RPM BELT: Tarring the weigh cells, this key must be held down for approx. 3 seconds (only displayed if WEIGHING ON is selected under encode).

Pressing the **"NEXT PAGE"** key displays the next functions.

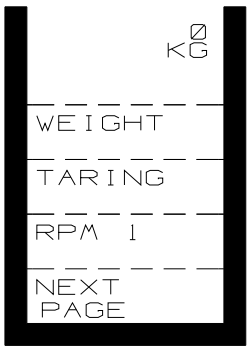


WEIGHT: Weighing in KG using weigh cells fitted on the spreader (only displayed if WEIGHING ON is selected under encode).

TARRING: Tarring the weigh cells, this key must be held down for approx. 3 seconds (only displayed if WEIGHING ON is selected under encode).

Using weighing (if the system is fitted with weigh cells).

Calibrating the weigh cells is a condition for correct operation. The calibration procedure is described under **"ENCODE"**.



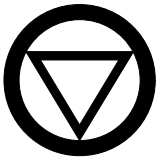
1. Press **"TARRING"** for approx. 3 seconds whilst at a standstill, **"WEIGHT"** will change to 0, which is the same as **0 KG**.

There are 2 possibilities:

A. Start spreading with the weight displayed, and at each weighing the amount left in the spreader can be seen.

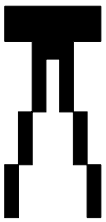
B. Each time **"TARRING"** is pressed for approx. 3 seconds with something in the spreader; the displayed KG will be 0. It is now possible to see how much has been used (negative weighing). It is ***not*** possible to see how much fertiliser is left in the spreader.

SPREADER ON/OFF:



This key is used as the on/off switch for the spreader.

It is also possible to start/stop the spreader using an external switch.



This picture is displayed when spreading.

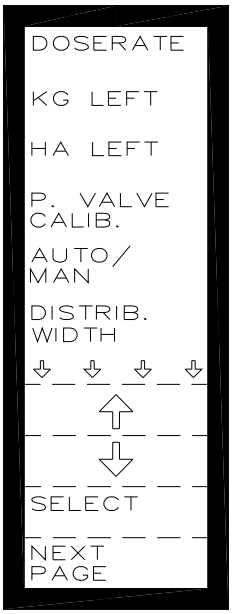
I

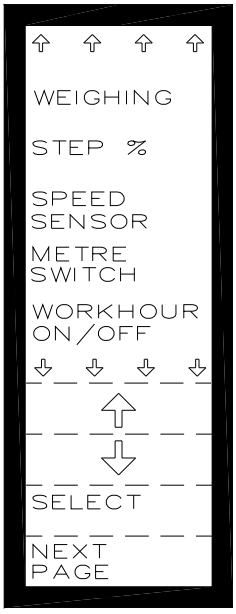
When the area override sensor is activated (not counting area) **"I"** is displayed and all sections will disappear.

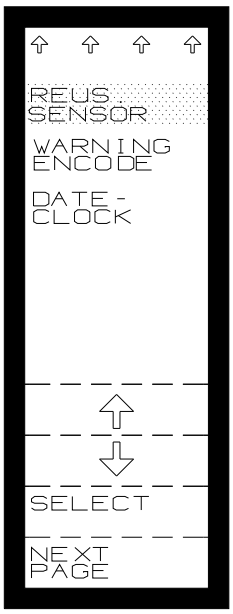
FERTILISER SPREADER ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

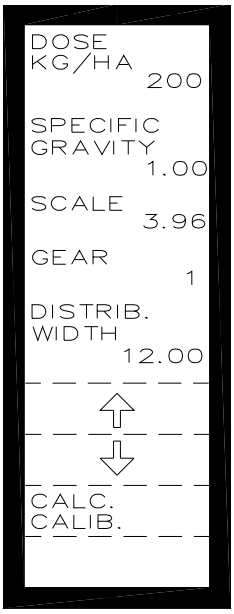
Always check these encodements in the status screen each time you change implements.





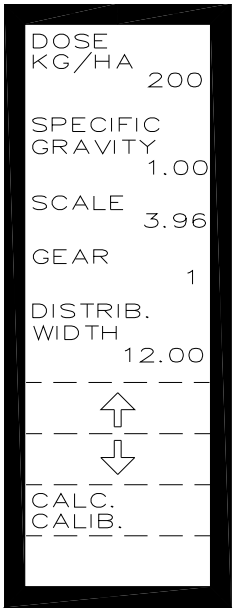


DOSE RATE:



The effective working width of the spreader must be encoded under **"DISTRIB: WIDTH"** ***before*** **DOSE RATE** is selected.

The required application rate and spreader setup is encoded thus:



1. Encode the required application rate with the numerical keypad under **"DOSE KG/HA"**.

2. The **"SPECIFIC GRAVITY"** is found using the specific gravity tester supplied by **BREDAL**

3. Pressing **"CALC. CALIB."** Calculates the correct **SCALE** and **GEAR**.

This menu cannot be left until **"CALC. CALIB."** has been pressed.

The required **DOSE RATE** along with the **specific gravity** and the **distributor width** gives:

The scale setting

The correct gear on the spreader

NOTE: The settings **must** be re-calculated under **"DOSE RATE"** each time the working width of the spreader has been altered.

KG/LEFT:

The amount filled into the spreader must be encoded here; to be able to see how much fertiliser is left in the hopper.

NOTE: If there is some fertiliser left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg left.

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

P. VALVE CALIBRATION

The proportional valve and the computer must be set up to work together; the valve needs to be calibrated. This calibration procedure ***must*** be carried out the first time the spreader is used and a few times thereafter, i.e. at the start of each season.

Before calibration

The hydraulic oil must be at its normal operating temperature before the calibration procedure is carried out.

Ensure that the spreader belts can run without hindrance.

IMPORTANT! The tractor hydraulic system must not supply more than 70 Litres per minute.

Calibration

1. Press **"START"** with an empty spreader, the hydraulic motor runs to full speed and falls slowly thereafter. The actual belt speed is shown as RPM whilst the calibration procedure is carried out.

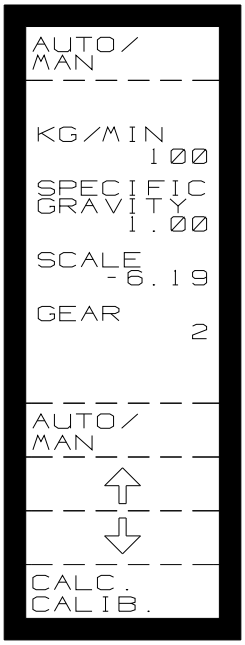
2. Press **"OK"** when it appears on the display, the calibration procedure is finished.

If the belt does reach the required speed in the defined time, a warning will be given.

AUTO/MAN

Select **"MAN"** if the spreader is to be emptied at a standstill or at very low speeds. For normal operation select **"AUTO"**.

"AUTO" is selected as the norm as this is applicable for most purposes.



Manual operation

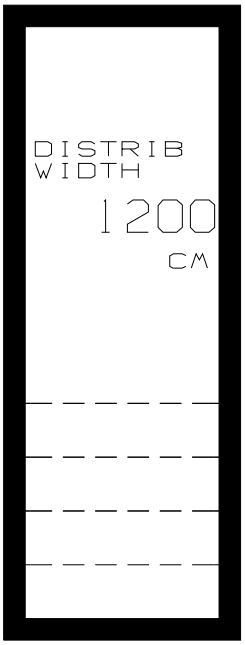
The rate in kg/min. must be encoded when "MAN" has been selected:

Encode the required kg/min. using the numerical keypad.

Pressing **"CALC: CALIB."** Calculates the correct settings for the spreader.

DISTRIBUTOR WIDTH:

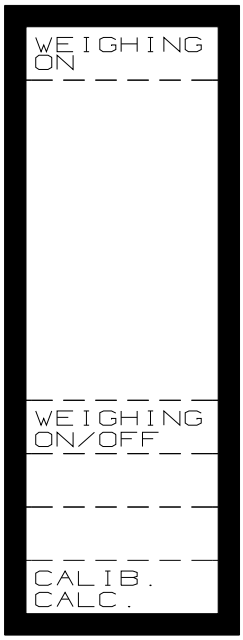
The effective spreading width of the spreader.



Method:

1. Press the **"DISTRIB. WIDTH"** key and the picture to the left is displayed.
2. Encode the effective spreading width in centimetres using the numerical keypad.

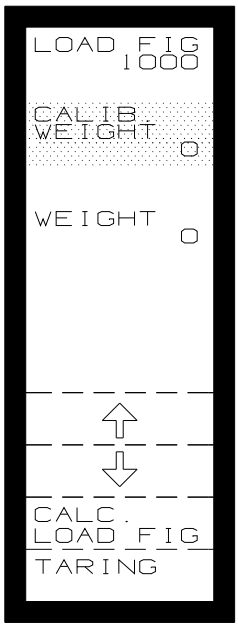
WEIGHING



If the spreader is equipped with weigh cells, then set weighing to **ON** otherwise set this to **OFF**.

WEIGHING ON:

If this function is required then the weighing system ***must*** be calibrated; this is done as follows:



1. Press the **"CALIB. CALC"** key and the picture to the left is displayed.
2. With an empty spreader press the **"TARRING"** key to zero set the weigh cells.
3. Fill the spreader with an exact known amount. The weight should be as large as possible, but ***must*** be minimum 50% of the spreaders capacity.
   Using the arrow keys, move the cursor to **"CALIB. WEIGHT"**, and encode the amount filled with the numerical keypad.
4. Press the flashing **"CALC. LOAD FIG"** key. The system has now been calibrated. The calculated figure is displayed at the top of the screen, note this figure if the system is to be used with other weigh cells in the future.

NOTE: The weigh cell calibration should be checked at regular intervals.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

FORWARD SPEED SENSOR

A speed sensor is fitted to the **spreader**, this sensor gives the correct number of pulses for controlling the application rate, and this sensor should be selected.

WHEEL TRACTOR AND RADAR

If forward speed measurement is not required from the sensor mounted on the spreader, WHEEL TRACTOR or RADAR can be selected.

Please refer to chapter 2 for speed sensor calibration

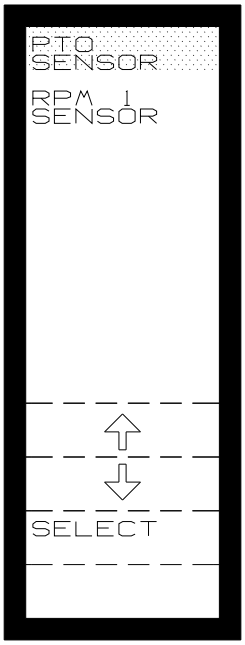
METRE SWITCH:

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR



Encode the number of pulses per revolution for the individual sensors.

PTO SENSOR: If the TeeJet PTO sensor kit is used (932-983) encode 1.

RPM 1 SENSOR: The Bredal kit is supplied with a sensor fitted for disc speed, the number of pulses per revolution should be set to 1.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO:	Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.
KM/H:	Warning **ON/OFF** and **MAX/MIN**-limits for speed.
SLIP:	Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.
RPM 1:	Warning **ON/OFF** and **MAX/MIN**-limits for revolutions. Encode as RPM.
KG LEFT:	Warning **ON/OFF** and amount of kg (min.) at which warning is wanted.
NB:	The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

FLOW FACTOR

Please refer to the documentation supplied with the spreader for information regarding the FLOW FACTOR. If the flow factor must be altered, press and hold the “HOLD” key for approx. 5 seconds before accepting the spreader type.

½ GEAR

If the spreader is fitted with a ½ gear then this must be encoded. Press and hols the “HOLD” key for approx. 5 seconds before accepting the spreader type. “½ GEAR” can now be switched between ON (if the spreader is fitted with a ½ gear) and OFF (if the spreader is not fitted with ½ gear).

Fertiliser distributor, Bredal (HYDR. K)

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BREDAL'S LIME SPREADER 4.63
LIME SPREADER OPERATION 4.64
LIME SPREADER-FUNCTIONS: 4.64
SPREADER ON/OFF: 4.66
LIME SPREADER ENCODE 4.67
DOSE RATE: 4.67
TON LEFT: 4.68
HA LEFT 4.68
P. VALVE CALIBRATION 4.69
AUTO/MAN 4.70
DISTRIBUTOR WIDTH: 4.70
WEIGHING 4.71
WEIGHING ON: 4.71
STEP %: 4.71
FORWARD SPEED SENSOR 4.72
WHEEL TRACTOR AND RADAR 4.72
METRE SWITCH: 4.72
WORK HOUR ON/OFF 4.72
REVS. SENSOR 4.72
WARNING ENCODE 4.73
DATE - CLOCK: 4.73

INTRODUCTION

TeeJet 5000 used to control the **BREDAL K** lime spreader.

- Maintain the correct application rate regardless of forward speed, plus the ability to alter the application rate in steps depending on the crop's requirement.

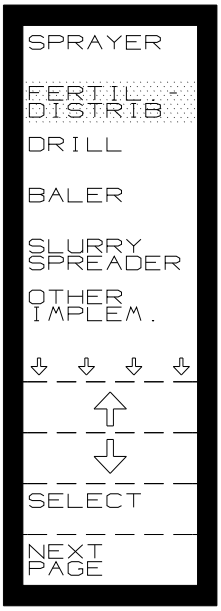
- The **TeeJet 5000** controls the application rate using a proportional valve that adjusts the amount of oil to a hydraulic pump, which in turn alters the belt speed.

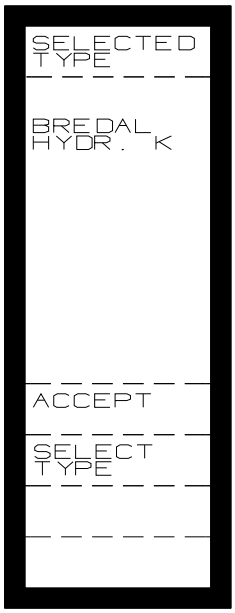
- Visible and audible warnings given for incorrect rates, forward speed, PTO, KG left, etc.

NOTE: The computer must be calibrated with the spreader to ensure correct operation.

This calibration must take place the first time the computer is connected to the spreader and each time the computer is connected to another spreader.

BREDAL'S LIME SPREADER



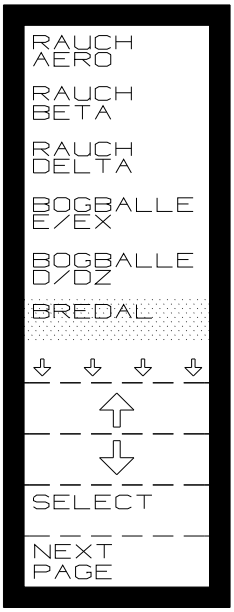


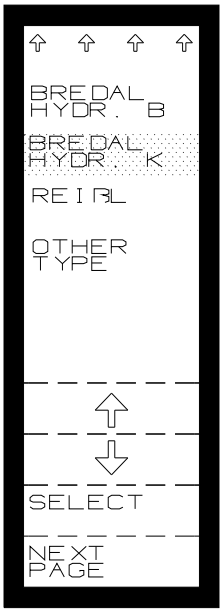
Select fertiliser distributor from the main menu as follows:

1. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.

2. Main menu
   – select fertiliser distributor.

3. **"ACCEPT"** or **"SELECT TYPE"**.



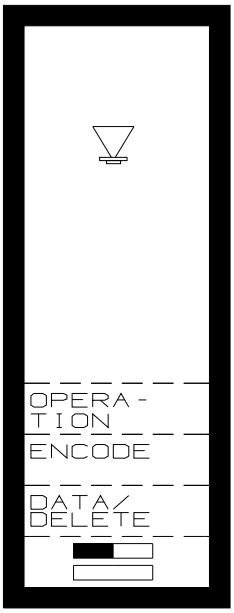


4. Select type.

5. It is now possible to choose between the displayed types.

6. Select fertiliser distributor type.

7. Accept type



It is now possible to select between the following functions:

OPERATION

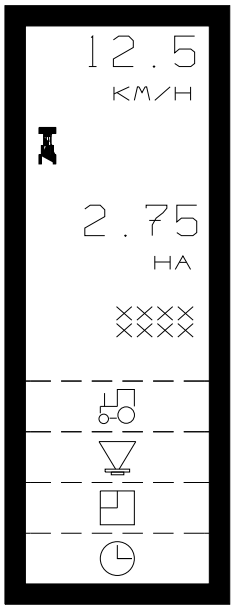
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

LIME SPREADER OPERATION



FORWARD SPEED (KG/MIN):

The primary function under fertiliser distributor is forward speed.

Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar).

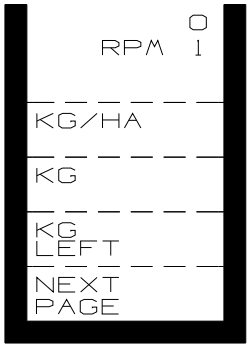
KG/MIN is displayed if “MAN” has been selected under **“AUTO/MAN”** in encode.

AREA MEASUREMENT:

The worked area is displayed in Ha. Area is displayed with 2 decimals from 0 to 99.99 ha. And thereafter with 1 decimal from 100 to 999.0 ha.

NOTE: a total counter for area can also be found in **“DATA/DELETE”**.

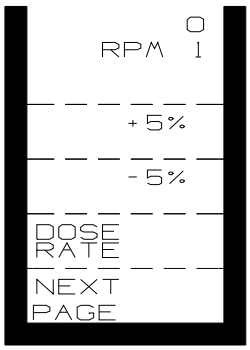
LIME SPREADER-FUNCTIONS:



TON/HA (RPM 1): Application rate in TON/HA. (The speed of a RPM sensor fitted to the spreader if “MAN” has been selected under encode)

TON: Lime consumption in tons

TON LEFT: Tons remaining in the hopper (the amount must be encoded before starting).



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

DOSE RATE NORMAL: Encoding the required application rate or return to normal after using the step key.

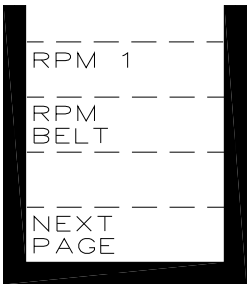
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step feature has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

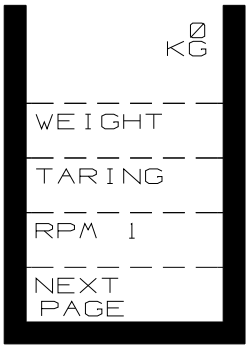
Pressing the **"NEXT PAGE"** key displays the next functions.



RPM 1: Weighing in KG using weigh cells fitted on the spreader (only displayed if WEIGHING ON is selected under encode).

RPM BELT: Tarring the weigh cells, this key must be held down for approx. 3 seconds (only displayed if WEIGHING ON is selected under encode).

Pressing the **"NEXT PAGE"** key displays the next functions.

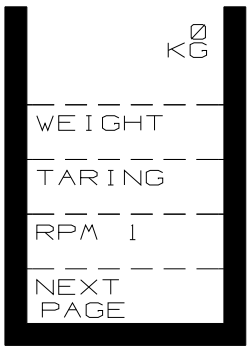


WEIGHT: Weighing in KG using weigh cells fitted on the spreader (only displayed if WEIGHING ON is selected under encode).

TARRING: Tarring the weigh cells, this key must be held down for approx. 3 seconds (only displayed if WEIGHING ON is selected under encode).

Using weighing (if the system is fitted with weigh cells).

Calibrating the weigh cells is a condition for correct operation. The calibration procedure is described under **"ENCODE"**.



1. Press **"TARRING"** for approx. 3 seconds whilst at a standstill, **"WEIGHT"** will change to 0, which is the same as **0 KG**.

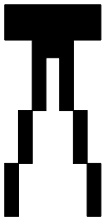
There are 2 possibilities:

a) Start spreading with the weight displayed, and at each weighing the amount left in the spreader can be seen.

b) Each time **"TARRING"** is pressed for approx. 3 seconds with something in the spreader; the displayed KG will be 0. It is now possible to see how much has been used (negative weighing). It is ***not*** possible to see how much fertiliser is left in the spreader.

SPREADER ON/OFF:

This key is used as the on/off switch for the spreader. It is also possible to start/stop the spreader using an external switch.



This picture is displayed when spreading.

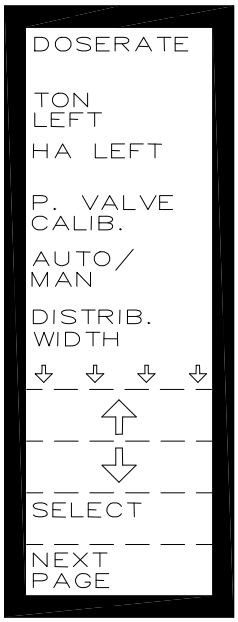
I

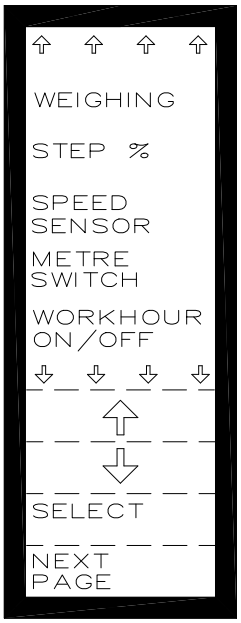
When the area override sensor is activated (not counting area) **"I"** is displayed and all sections will disappear.

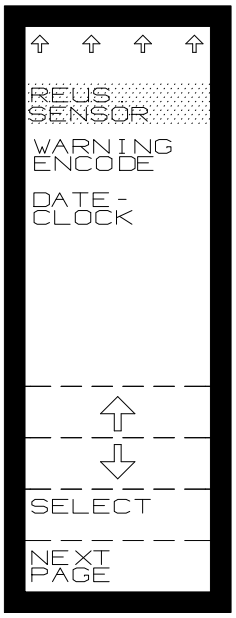
LIME SPREADER ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

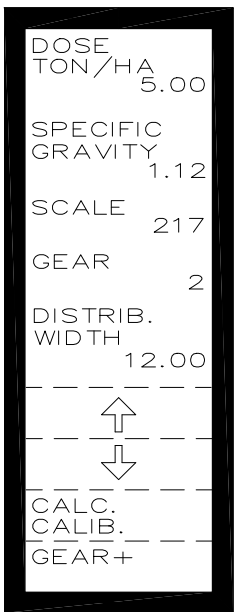
Always check these encodements in the status screen each time you change implements.







DOSE RATE:

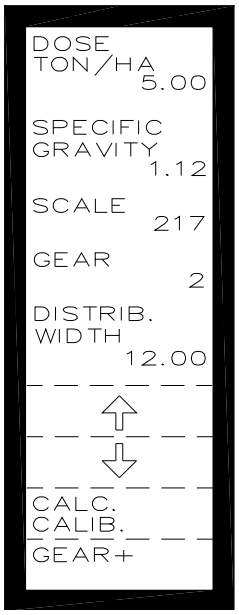


The effective working width of the spreader must be encoded under **"DISTRIB: WIDTH"** ***before*** **DOSE RATE** is selected.

Some spreaders are fitted with a ½ gear. It is possible to alter the calculated gear by pressing the **"GEAR+"** key. A new calculation must take place if the calculated gear has been altered. If the calculated scale is greater than 300, then GEAR+ must be altered again.

Please refer to the documentation supplied with the spreader for more information.

The required application rate and spreader setup is encoded thus:



Encode the required application rate with the numerical keypad under **"DOSE TON/HA"**.

The **"SPECIFIC GRAVITY"** is found using the specific gravity tester supplied by **BREDAL**

Pressing **"CALC. CALIB."** Calculates the correct **SCALE** and **GEAR**.

This menu cannot be left until **"CALC. CALIB."** has been pressed.

The required **DOSE RATE** along with the **specific gravity** and the **distributor width** gives:

The scale setting

The correct gear on the spreader

NOTE: The settings **must** be re-calculated under **"DOSE RATE"** each time the working width of the spreader has been altered.

TON LEFT:

The amount filled into the spreader must be encoded here; to be able to see how much lime is left in the hopper.

NOTE: If there is some lime left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Ton left.

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

P. VALVE CALIBRATION

The proportional valve and the computer must be set up to work together; the valve needs to be calibrated. This calibration procedure ***must*** be carried out the first time the spreader is used and a few times thereafter, i.e. at the start of each season.

Before calibration

The hydraulic oil must be at its normal operating temperature before the calibration procedure is carried out.

Ensure that the spreader belts can run without hindrance.

IMPORTANT! The tractor hydraulic system must not supply more than 70 Litres per minute.

Calibration

1. Press **"START"** with an empty spreader, the hydraulic motor runs to full speed and falls slowly thereafter. The actual belt speed is shown as RPM whilst the calibration procedure is carried out.

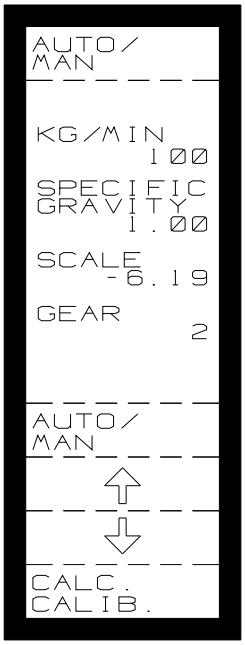
2. Press **"OK"** when it appears on the display, the calibration procedure is finished.

If the belt does reach the required speed in the defined time, a warning will be given.

AUTO/MAN

Select **"MAN"** if the spreader is to be emptied at a standstill or at very low speeds. For normal operation select **"AUTO"**.

"AUTO" is selected as the norm as this is applicable for most purposes.



Manual operation

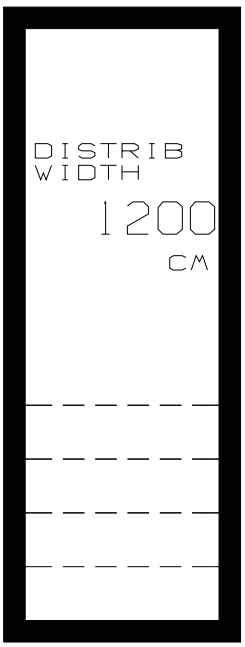
The rate in kg/min. must be encoded when "MAN" has been selected:

Encode the required kg/min. using the numerical keypad.

Pressing **"CALC: CALIB."** Calculates the correct settings for the spreader.

DISTRIBUTOR WIDTH:

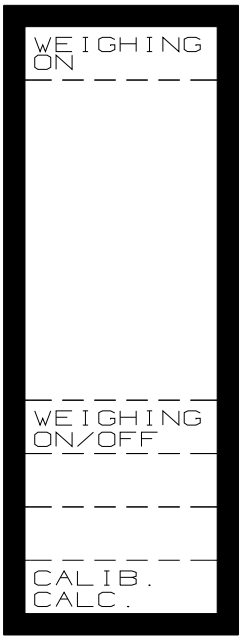
The effective spreading width of the spreader.



Method:

1. Press the **"DISTRIB. WIDTH"** key and the picture to the left is displayed.
2. Encode the effective spreading width in centimetres using the numerical keypad.

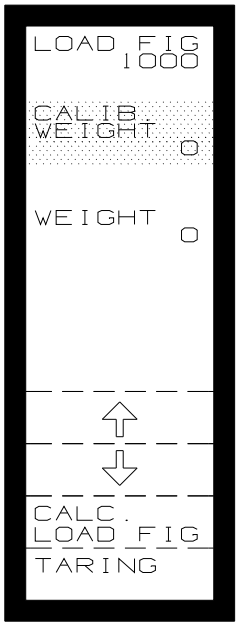
WEIGHING



If the spreader is equipped with weigh cells, then set weighing to **ON** otherwise set this to **OFF**.

WEIGHING ON:

If this function is required then the weighing system ***must*** be calibrated; this is done as follows:



1. Press the **"CALIB. CALC"** key and the picture to the left is displayed.
2. With an empty spreader press the **"TARRING"** key to zero set the weigh cells.
3. Fill the spreader with an exact known amount. The weight should be as large as possible, but ***must*** be minimum 50% of the spreaders capacity.
   Using the arrow keys, move the cursor to **"CALIB. WEIGHT"**, and encode the amount filled with the numerical keypad.
4. Press the flashing **"CALC. LOAD FIG"** key. The system has now been calibrated. The calculated figure is displayed at the top of the screen, note this figure if the system is to be used with other weigh cells in the future.

NOTE: The weigh cell calibration should be checked at regular intervals.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

FORWARD SPEED SENSOR

A speed sensor is fitted to the **spreader**, this sensor gives the correct number of pulses for controlling the application rate, and this sensor should be selected.

WHEEL TRACTOR AND RADAR

If forward speed measurement is not required from the sensor mounted on the spreader, WHEEL TRACTOR or RADAR can be selected.

Please refer to chapter 2 for speed sensor calibration

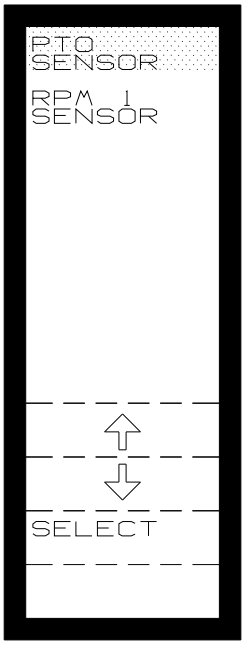
METRE SWITCH:

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR



Encode the number of pulses per revolution for the individual sensors.

PTO SENSOR: If the TeeJet PTO sensor kit is used (932-983) encode 1.

RPM 1 SENSOR: The Bredal kit is supplied with a sensor fitted for disc speed, the number of pulses per revolution should be set to 1.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

RPM 1: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions. Encode as RPM.

TON LEFT: Warning **ON/OFF** and amount in tons (minimum) at which warning is wanted.

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

Fertiliser distributor, Bredal K Ramp

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BREDAL'S LIME SPREADER 4.77
LIME SPREADER OPERATION 4.78
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INTRODUCTION

TeeJet 5000 used to control the **BREDAL K** lime spreader with auger.

- Maintain the correct application rate regardless of forward speed, plus the ability to alter the application rate in steps depending on the crop's requirement.

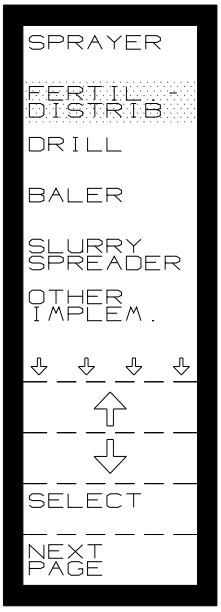
- The **TeeJet 5000** controls the application rate using a proportional valve that adjusts the amount of oil to a hydraulic pump, which in turn alters the belt and auger speed.

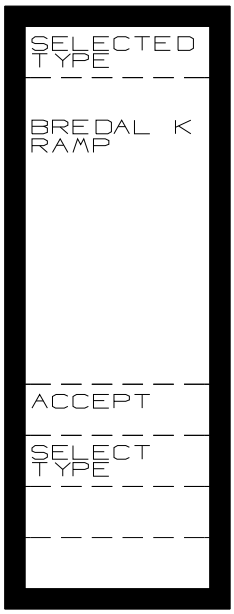
- Visible and audible warnings given for incorrect rates, forward speed, PTO, KG left, etc.

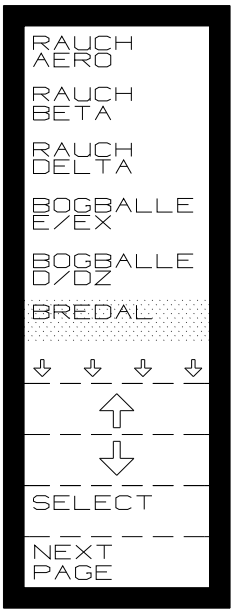
NOTE: The computer must be calibrated with the spreader to ensure correct operation.

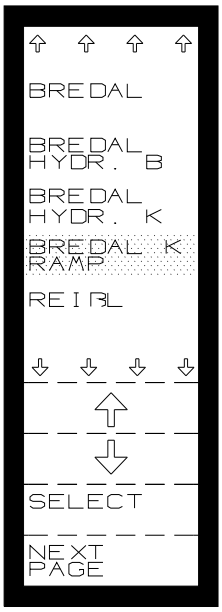
This calibration must take place the first time the computer is connected to the spreader and each time the computer is connected to another spreader.

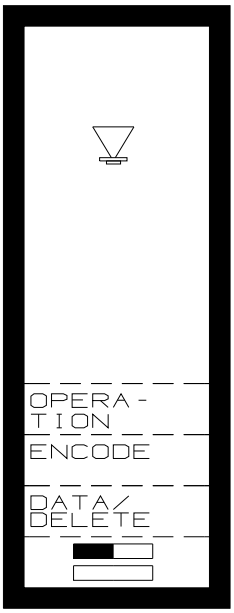
BREDAL'S LIME SPREADER











1. Select fertiliser distributor from the main menu as follows:

2. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.

3. Main menu
   – select fertiliser distributor.

4. **"ACCEPT"** or **"SELECT TYPE"**.

5. Select type.

6. It is now possible to choose between the displayed types.

7. Select fertiliser distributor type.

8. Accept type

It is now possible to select between the following functions:

OPERATION

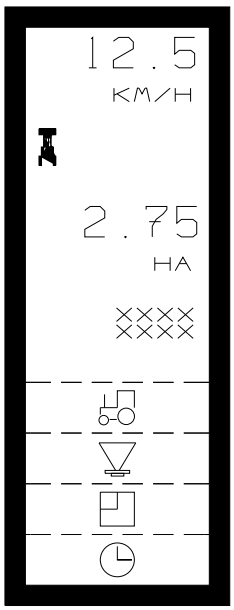
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

LIME SPREADER OPERATION



FORWARD SPEED:

The primary function under fertiliser distributor is forward speed.

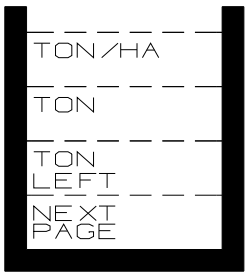
Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar).

AREA MEASUREMENT:

The worked area is displayed in Ha. Area is displayed with 2 decimals from 0 to 99.99 ha. And thereafter with 1 decimal from 100 to 999.0 ha.

NOTE: A total counter for area can also be found in **"DATA/DELETE"**.

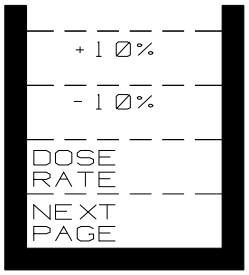
LIME SPREADER-FUNCTIONS:



TON/HA (RPM 1): Application rate in TON/HA.

TON: Lime consumption in tons

TON LEFT: Tons remaining in the hopper (the amount must be encoded before starting).



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

DOSE RATE NORMAL: Encoding the required application rate or return to normal after using the step key.

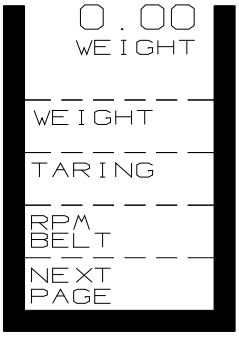
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step feature has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next functions.



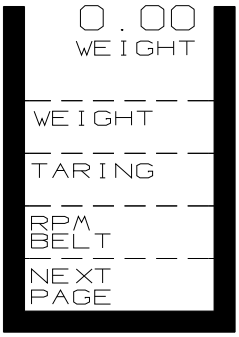
WEIGHT: Weighing in KG using weigh cells fitted on the spreader (only displayed if WEIGHING ON is selected under encode).

TARRING: Tarring the weigh cells, this key must be held down for approx. 3 seconds (only displayed if WEIGHING ON is selected under encode).

RPM BELT: Belt speed in RPM.

Using weighing (if the system is fitted with weigh cells).

Calibrating the weigh cells is a condition for correct operation. The calibration procedure is described under **"ENCODE"**.



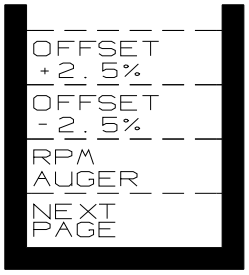
Press "TARRING" for approx. 3 seconds whilst at a standstill, "WEIGHT" will change to 0, which is the same as **0 KG**.

There are 2 possibilities:

a: Start spreading with the weight displayed, and at each weighing the amount left in the spreader can be seen.

b: Each time **"TARRING"** is pressed for approx. 3 seconds with something in the spreader; the displayed KG will be 0. It is now possible to see how much has been used (negative weighing). It is ***not*** possible to see how much fertiliser is left in the spreader.

Pressing the **"NEXT PAGE"** key displays the next functions.



OFFSET AUGER: Offset increase/decrease.

OFFSET +XX%: Offset increase (only shown if OFFSET AUGER is activated).

OFFSET -XX%: Offset decrease (only shown if OFFSET AUGER is activated).

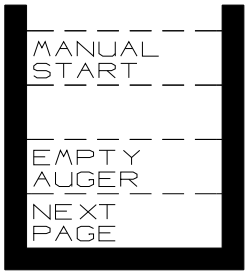
RPM AUGER: Auger speed.

OFFSET AUGER: Offset ON/OFF. When this key is pressed the OFFSET function is activated.

OFFSET +/-XX%: Step increase or decrease. This function is only shown if the OFFSET function is activated. The size of the offset steps is encoded in the service menu (see encode). The OFFSET function is used to alter the standard auger speed. The auger speed is determined by a curve in relation to the application rate. The auger speed is altered when the application rate is altered and changing the OFFSET changes the relation between auger speed and the application rate.

RPM AUGER: Pressing this key displays the auger speed in RPM.

Pressing the **"NEXT PAGE"** key displays the next functions.



MANUAL START: Manual auger start

EMPTY AUGER: Emptying the auger.

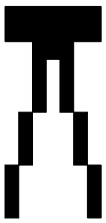
MANUAL START: The belt and auger run for 30 seconds when this key is pressed. The runs at a speed co-responding to a forward speed of 8 kph and the auger turns with 250 RPM. Manual start is cancelled after 30 seconds or when the forward speed is over 3 kph.
Manual start can, e.g. be used in field corners where a run up is not possible.

EMPTY AUGER: the auger is emptied when this key is pressed. The auger will turn with 200 RPM when this key is held down. The auger stops when the key is released.

Pressing the **"NEXT PAGE"** key displays the first available functions.

SPREADER ON/OFF:

This key is used as the on/off switch for the spreader. It is also possible to start/stop the spreader using an external switch.



This picture is displayed when spreading.

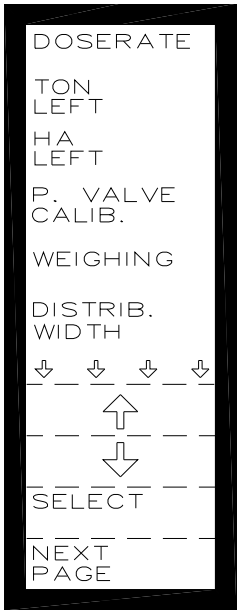
I

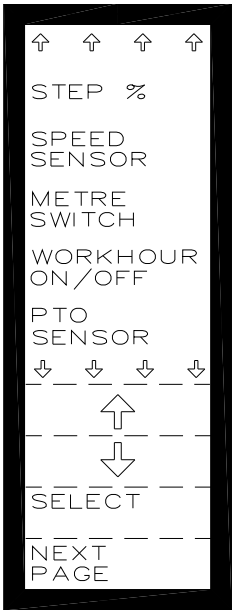
When the area override sensor is activated (not counting area) **"I"** is displayed and all sections will disappear.

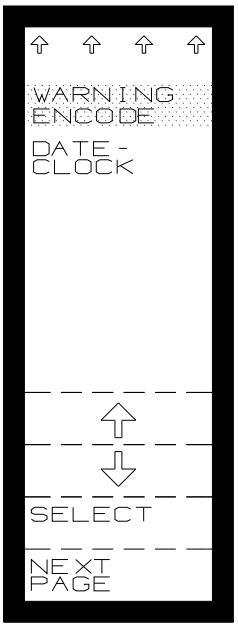
LIME SPREADER ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

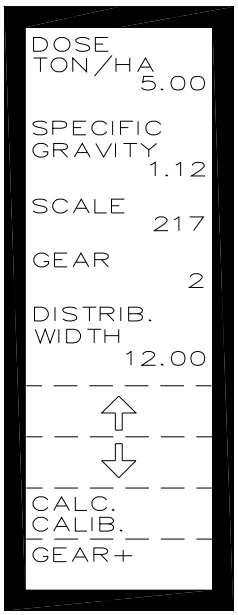
Always check these encodements in the status screen each time you change implements.







DOSE RATE:

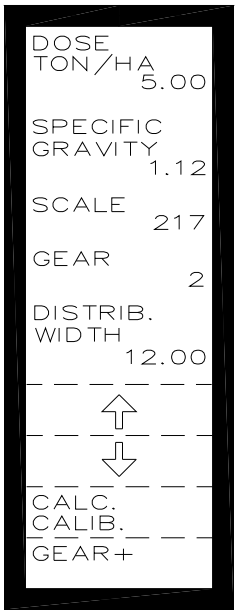


The effective working width of the spreader must be encoded under **"DISTRIB: WIDTH"** ***before*** **DOSE RATE** is selected.

Some spreaders are fitted with a ½ gear. It is possible to alter the calculated gear by pressing the **"GEAR+"** key. A new calculation must take place if the calculated gear has been altered. If the calculated scale is greater than 300, then GEAR+ must be altered again.

Please refer to the documentation supplied with the spreader for more information.

The required application rate and spreader setup is encoded thus:



Encode the required application rate with the numerical keypad under **"DOSE TON/HA"**.

The **"SPECIFIC GRAVITY"** is found using the specific gravity tester supplied by **BREDAL**

Pressing **"CALC. CALIB."** Calculates the correct **SCALE** and **GEAR**.

This menu cannot be left until **"CALC. CALIB."** has been pressed.

The required **DOSE RATE** along with the **specific gravity** and the **distributor width** gives:

The scale setting

The correct gear on the spreader

NOTE: The settings **must** be re-calculated under **"DOSE RATE"** each time the working width of the spreader has been altered.

TON/LEFT:

The amount filled into the spreader must be encoded here; to be able to see how much lime is left in the hopper.

NOTE: If there is some lime left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Ton left.

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

P. VALVE CALIBRATION

The proportional valves and the computer must be set up to work together; the valves need to be calibrated. This calibration procedure ***must*** be carried out the first time the spreader is used and a few times thereafter, i.e. at the start of each season.

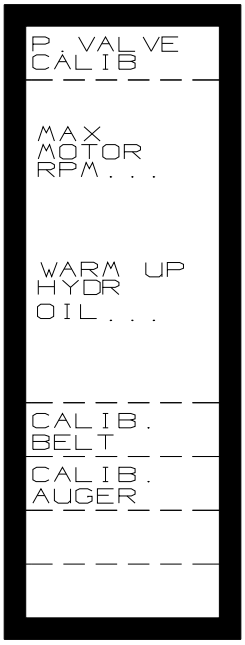
Before calibration

The hydraulic oil must be at its normal operating temperature before the calibration procedure is carried out.

Ensure that the spreader belts can run without hindrance.

The auger should be “full” before calibration to avoid vibration.

IMPORTANT! The tractor hydraulic system must not supply more than 70 Litres per minute.



Calibration

1. Press **“CALIB. BELT”** with an empty spreader, the hydraulic motor runs to full speed and falls slowly thereafter.

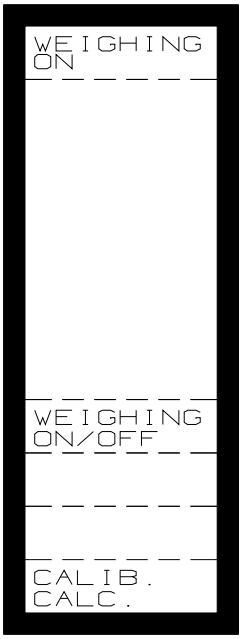
   The speed of the hydraulic motor is shown on the display during calibration. A warning will be given if the belt does not reach the required speed within the required time.

2. Press **“OK”** when it appears on the display, the calibration procedure is finished.

3. Press **“CALIB. BELT”** with an empty spreader, the hydraulic motor runs to full speed and falls slowly thereafter.

4. Press **“OK”** when it appears on the display, the calibration procedure is finished.

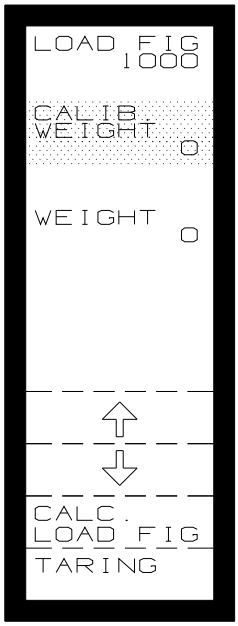
WEIGHING



If the spreader is equipped with weigh cells, then set weighing to **ON** otherwise set this to **OFF**.

WEIGHING ON

If this function is required then the weighing system ***must*** be calibrated; this is done as follows:

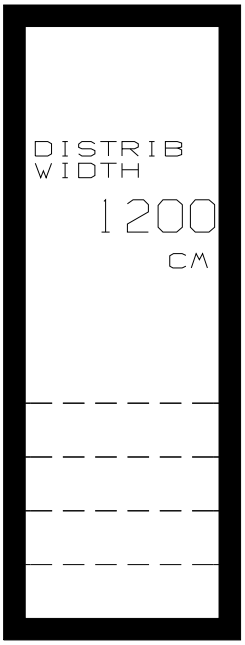


1. Press the **"CALIB. CALC"** key and the picture to the left is displayed.
2. With an empty spreader press the **"TARRING"** key to zero set the weigh cells.
3. Fill the spreader with an exact known amount. The weight should be as large as possible, but ***must*** be minimum 50% of the spreaders capacity.
   Using the arrow keys, move the cursor to **"CALIB. WEIGHT"**, and encode the amount filled with the numerical keypad.
4. Press the flashing **"CALC. LOAD FIG"** key. The system has now been calibrated. The calculated figure is displayed at the top of the screen, note this figure if the system is to be used with other weigh cells in the future.

NOTE: The weigh cell calibration should be checked at regular intervals.

DISTRIBUTOR WIDTH:

The effective spreading width of the spreader.



Method:

1. Press the **"DISTRIB. WIDTH"** key and the picture to the left is displayed.

2. Encode the effective spreading width in centimetres using the numerical keypad.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

FORWARD SPEED SENSOR

A speed sensor is fitted to the spreader, this sensor gives the correct number of pulses for controlling the application rate, and this sensor should be selected.

WHEEL TRACTOR AND RADAR

If forward speed measurement is not required from the sensor mounted on the spreader, WHEEL TRACTOR or RADAR can be selected.

Please refer to chapter 2 for speed sensor calibration

METRE SWITCH:

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR

Encode the number of pulses per revolution the PTO sensor sends per revolution.

If the TeeJet PTO sensor kit is used (932-983) encode 1.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

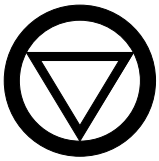
PTO:	Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.
KM/H:	Warning **ON/OFF** and **MAX/MIN**-limits for speed.
SLIP:	Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.
TON LEFT:	Warning **ON/OFF** and amount of kg (min.) at which warning is wanted.
NB:	The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

OFFSET



1. Press and hold this key for approx. 5 seconds before the selected spreader is accepted.
2. Encode the required offset value using the numeric keypad.

Fertiliser distributor, Rauch Aero

RAUCH AERO FERTILISER DISTRIBUTOR 4.90
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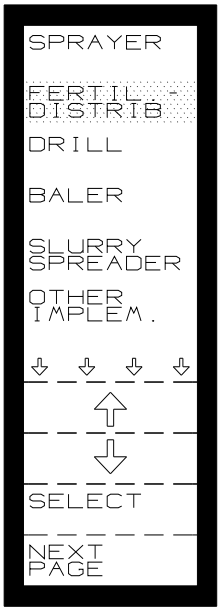
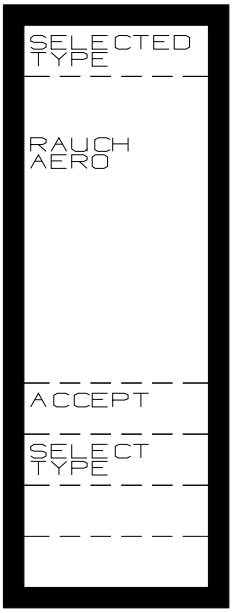
KG/LEFT: 4.99
HA LEFT 4.99
METRE SWITCH 4.99
WORK HOUR ON/OFF 4.99
PTO SENSOR: 4.100
WARNING ENCODE 4.100
DATE - CLOCK: 4.100

RAUCH AERO FERTILISER DISTRIBUTOR



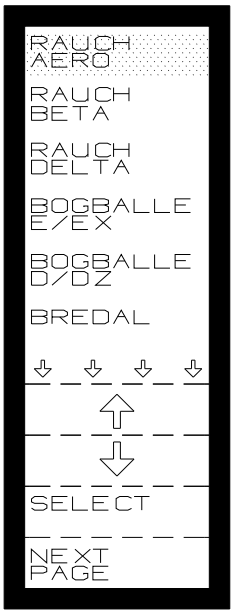


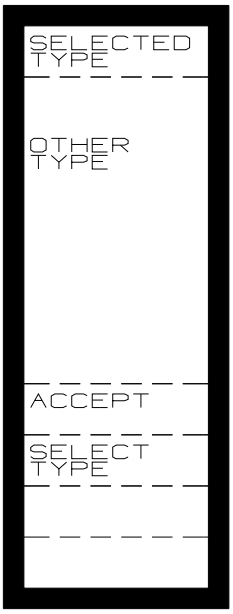
1. Select fertiliser distributor from the main menu as follows:

2. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.

3. Main menu
   – select fertiliser distributor.

4. **"ACCEPT"** or **"SELECT TYPE"**.



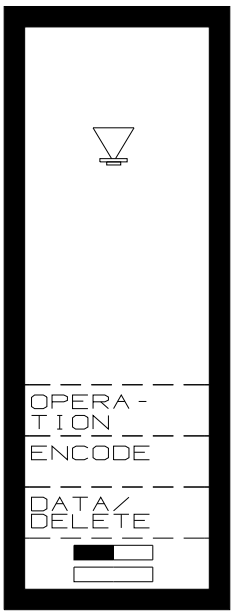


5. Select type.

6. It is now possible to choose between the displayed types.

7. Select fertiliser distributor type.

8. Accept type



It is now possible to select between the following functions:

OPERATION

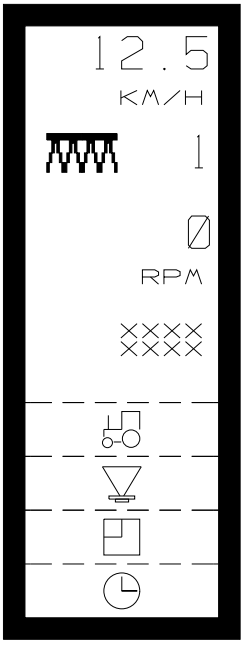
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FERTILISER DISTRIBUTOR OPERATION



FORWARD SPEED:

The primary function under fertiliser distributor is forward speed.

Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar).

SPREADER SECTION INDICATION:

The picture to the left shows a 4-section spreader with both sections open. The number of sections can be changed in **"ENCODE"**.

The figure to the right indicates which calibration is being used.

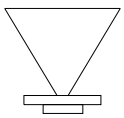
RPM FOR FEED ROLLERS AND REGULATION:

The speed of the feed rollers is displayed; this speed expresses the application rate. An arrow to the left of the screen shows whether the feed roller speed is increasing or decreasing.

I

When the area override sensor is activated (not counting area) "I" is displayed and all sections will disappear.

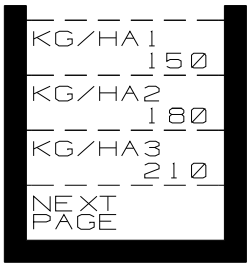
FERTILISER SPREADER FUNCTIONS



There are 2 different function sets in this menu. The displayed set depends on whether automatic or manual application control has been selected.

The following describes each function set individually.

1. AUTOMATIC APPLICATION CONTROL.



KG/HA1

KG/HA2 These 3 application rates are set in **"ENCODE"** and can be selected under **"OPERATION"**.

KG/HA3

Pressing one of these keys displays the encoded **required** application rate. Not the **actual** application rate.

Before accurate automatic application control can take place, it is important to calibrate the system using the fertiliser to be spread.

To minimize the risk of incorrect operation/application, the following automatic warnings may be displayed.

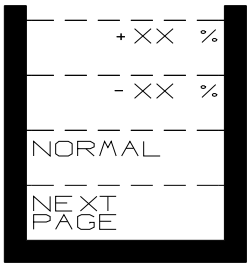
DOSERATE

If the required application rate can not be achieved.

WRONG SPREADER WIDTH

If the spreader width being used is not the same as the spreader used when calibrating.

Pressing the **"NEXT PAGE"** key displays the next functions.



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

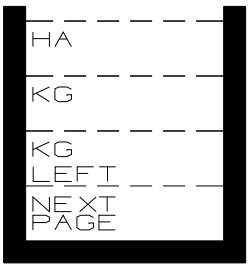
NORMAL: Return to the selected application rate.

+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

Pressing the **"NEXT PAGE"** key displays the next functions.



HA: Area

KG: Consumption in KG.

KG LEFT: How many KG are left in the hopper at present.

HA: Area counter. Worked area since the last reset.

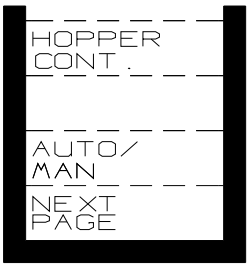
NOTE: Total area counter is found in **"DATA/DELETE"**.

KG: Total KG used calculated from forward speed and gate position. This function presupposes correct calibration.

NOTE: Total KG counter is found in **"DATA/DELETE"**.

KG REST: Total KG remaining in the hopper (the amount must be encoded before start).

Pressing the **"NEXT PAGE"** key displays the next functions.



HOPPER CONT: Amount remaining in the hopper.

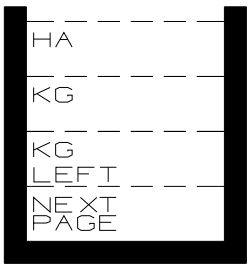
AUTO/MAN: Select manual or automatic application control.

HOPPER CONT: The calculated amount remaining in the hopper, the amount filled into the hopper must be encoded before starting.

AUTO/MAN: Pressing this key changes between automatic and manual application control. During manual operation **"MAN"** flashes at the bottom of the display.

Pressing the **"NEXT PAGE"** key displays the first functions.

2. MANUAL APPLICATION CONTROL



HA: Area.

KG: Consumption in KG.

KG LEFT: How many KG are left in the hopper at present.

HA: Area counter. Worked area since the last reset.

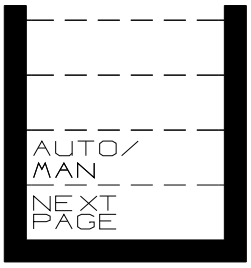
NOTE: Total area counter is found in **"DATA/DELETE"**.

KG: Total KG used, calculated from forward speed and gate position. This function presupposes correct calibration.

NOTE: Total KG counter is found in **"DATA/DELETE"**.

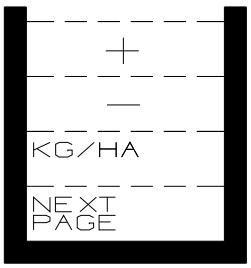
KG REST: Total KG remaining in the hopper (the amount must be encoded before start).

Pressing the **"NEXT PAGE"** key displays the next functions.



AUTO/MAN: Pressing this key changes between automatic and manual application control. During manual operation **"MAN"** flashes at the bottom of the display.

Pressing the **"NEXT PAGE"** key displays the first functions.



+: Higher application rate.

-: Lower application rate.

KG/HA: The present application rate.

+: Each press of this key increases the speed of the feed rollers by 1 RPM. If the key is held down then the speed of the feed rollers will increase at a suitable speed. The present application rate can be seen at the same time by pressing **"KG/HA"**.

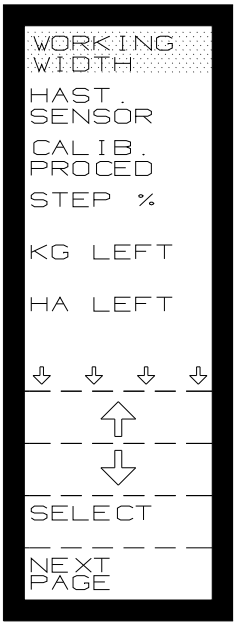
-: Each press of this key decreases the speed of the feed rollers by 1 RPM. If the key is held down then the speed of the feed rollers will decrease at a suitable speed. The present application rate can be seen at the same time by pressing **"KG/HA"**.

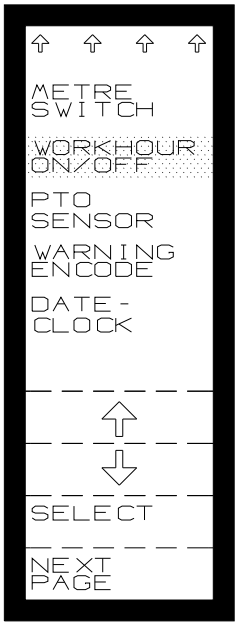
KG/HA: The present application rate, calculated from the forward speed, working width plus the present speed of the feed rollers.

FERTILISER DISTRIBUTOR ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.





WORKING WIDTH:

The working width for the spreader being used. Each spreader section is encoded individually in centimetres (section 1 is on the left-hand side of the machine)

NB: All unused sections must be encoded as 0.

The total working width can be seen at the bottom of the display under encode.

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 fertiliser distributor program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR:

Speed sensor fitted on the tractor. The sensor can be built into the tractor's gearbox or rear axle as standard factory fitted or be retrofit on a wheel or drive shaft.

NOTE: Wheelslip will give inaccurate speed-readings.

WHEEL SPREADER:

Speed sensor fitted to trailed spreaders. This type of sensor will, as a rule, give a very accurate speed-reading.

RADAR:

Signal from a radar, fitted on the tractor. This type of sensor gives a very accurate speed reading on hard surfaces, but a high crop and reflecting surfaces (water) can give an inaccurate reading.

Please refer to chapter 2 for speed sensor calibration.

FERTILISER CALIBRATION PROCEDURE:

The computer allows you to "save" up to 3 different calibrations, e.g. different fertiliser types. Each calibration represents the individual test plus 3 "fixed" (but user defined) application rates, i.e. 150 kg/ha, 200 kg/ha, 250 kg/ha.

A new calibration ***must*** be carried out each time:

1. The first time the spreader is used.

2. When the working width is changed.

3. The fertiliser type is changed.

A new calibration ***should*** take place when:

1. If you suspect that the flow characteristics of the fertiliser have changed, i.e. a new load.

2. Change of weather (temperature and moisture).

Even when the above factors have been taken into consideration, fertiliser calibration should be checked at regular intervals.

FERTILISER CALIBRATION:

Prepare the spreader as follows before the fertiliser calibration procedure takes place:

1. To ease the calibration procedure it is only necessary to calibrate one section of the spreader. Using the switch box open this one section and shut all of the other sections. The main on/off switch should be set to off.

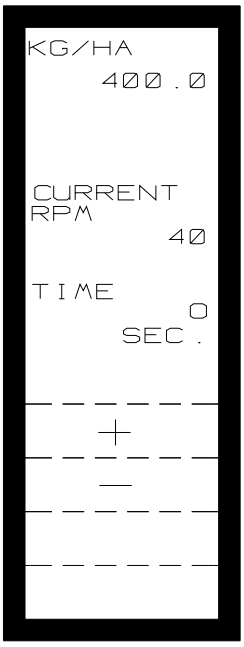
   NOTE: The calibration procedure can be done using both sections. The optimal accuracy is achieved using both sections, but an adequate accuracy can be achieved by measuring the amount of fertiliser from one section.

   If you wish to calibrate using both sections then the TeeJet 5000 knows how many and which sections are open during the test. The only difference therefore, is that the fertiliser from all of the sections open must be captured and weighed during the calibration procedure.

2. Open the hydraulic valve and move the main on/off switch to on for a short time to fill the feed rollers.
3. Empty the bucket and the fertiliser calibration procedure is now ready.

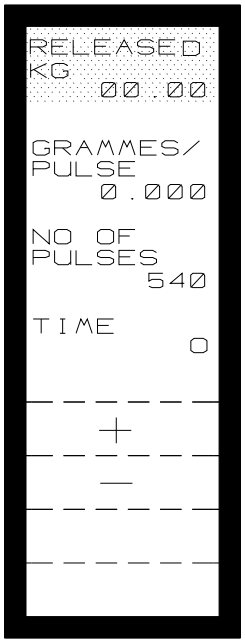
The **TeeJet 5000** is now almost able to control the calibration procedure on its own. Proceed as follows:

1. Press the **"CALIB. PROCED."** key and thereafter the **"NEW CALIB."** Key.



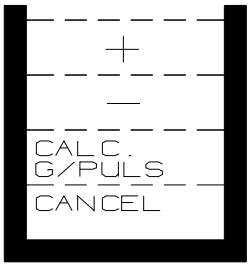
2. Encode the 3 different application rates that are to be used in operation. Press the **"CALIB PROCED."** key.

   The top of the display shows the application rate to be calibrated. The computer automatically sets the speed of the feed rollers to 10% of the required application rate (400 kg/ha => 40 RPM). If, however, through experience you know that the speed of the feed rollers should be higher or lower for this particular application rate, then the feed roller speed can be increased or decreased using the + or – keys.



3. Switch the main on/off switch to on and the feed rollers will start turning.
The present feed roller RPM and the time in seconds will be displayed during the calibration procedure.
To ensure an accurate calibration, the TeeJet 5000 must count minimum 500 pulses before the procedure can be stopped
As soon as the computer has counted 500 pulses the screen will change and the calibration procedure can be stopped when required by switching the main on/off switch to off.

NB: Calibrating as much fertiliser as possible (filling the bucket) will ensure greater accuracy.



4. Switch the main switch to off and the shown keys will be displayed.
If for some reason, you do not wish to continue with the calibration procedure then press the **"CANCEL"** key.

5. Weigh the amount released into the bucket exactly, remembering to deduct the weight of the bucket.
Encode the amount released with 2 decimals using the numerical keypad (displayed at the top of the screen).

6. Press the **"CALC. G/PULSE"** key, and the computer calculates the amount released per pulse and displays the amount at the top of the screen.

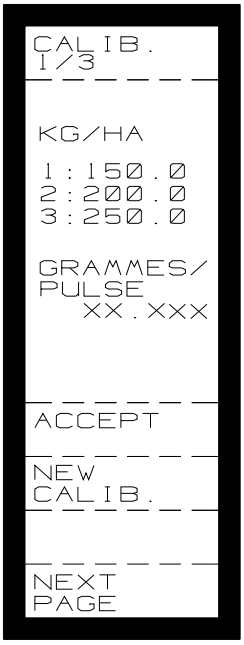
If you are satisfied with the result of the calibration pressing the **"ACCEPT"** key will allow you to save the calibration in 1 of 3 positions. Select which position to save the calibration in using the arrow keys, press thereafter the **"SELECT"** key.

If the "CALCULATE" key is pressed, the calibration will be used until another calibration procedure takes place or another calibration (previously saved) is selected.

If however, through experience you know that the calculated amount released per pulse is incorrect then press **"CANCEL"** and a new calibration test must be carried out.

The calibration procedure relates closely to the encoded working width. The computer will give a warning if the working width is changed without re-calibrating the spreader.

If there are previously saved calibration results the procedure is as follows:



1. Press the **"CALIB. PROCED."** key and the TeeJet5000 displays the picture to the left.
   It is possible to page through the saved calibration results using the **"NEXT PAGE"** key.
2. Pressing the **"ACCEPT"** key uses the selected calibration.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

KG/LEFT:

The amount filled into the spreader must be encoded here; to be able to see how much fertiliser is left in the hopper.

NOTE: If there is some fertiliser left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. left.

KG LEFT can be set as an alarm

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

PTO SENSOR:

The number of pulses per revolution of the PTO is encoded here.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO:	Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.
KM/H:	Warning **ON/OFF** and **MAX/MIN**-limits for speed.
SLIP:	Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.
KG LEFT:	Warning **ON/OFF** and amount of kg (min.) at which warning is wanted.

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

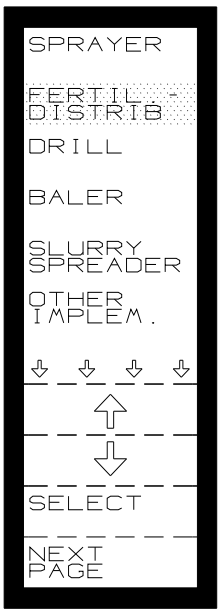
Fertiliser distributor, Rauch Beta/Delta

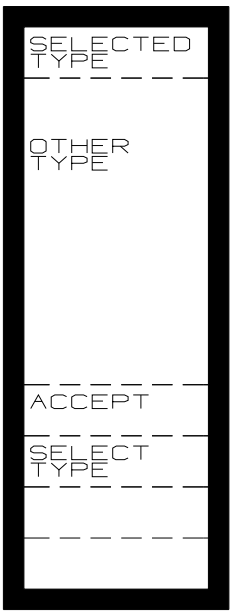
Beta = Axera M, Beta, PK1100, Alpha og MDS11

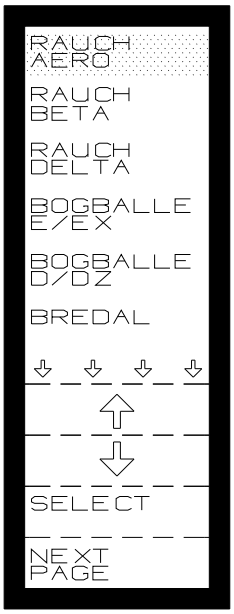
Delta = Delta og PK1500

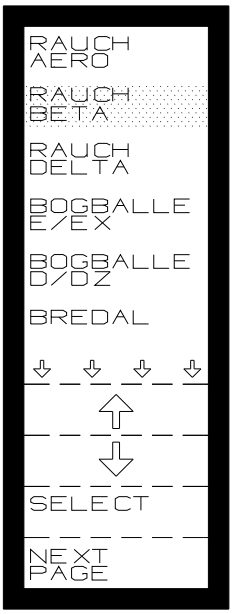
RAUCH BETA/DELTA FERTILISER DISTRIBUTOR 4.102
FERTILISER DISTRIBUTOR OPERATION 4.103
FERTILISER SPREADER FUNCTIONS: 4.103
1. AUTOMATIC APPLICATION CONTROL. 4.104
2. MANUAL APPLICATION CONTROL 4.106
FERTILISER DISTRIBUTOR ENCODE 4.108
WORKING WIDTH: 4.108
SPEED SENSOR: 4.109
WHEEL TRACTOR: 4.109
WHEEL SPREADER: 4.109
RADAR: 4.109
FERTILISER CALIBRATION PROCEDURE: 4.109
FERTILISER CALIBRATION: 4.110
STEP %: 4.111
KG/LEFT: 4.111
HA LEFT 4.111
METRE SWITCH 4.111
WORK HOUR ON/OFF 4.111
WARNING ENCODE 4.112
DATE - CLOCK: 4.112
OFFSET 4.112

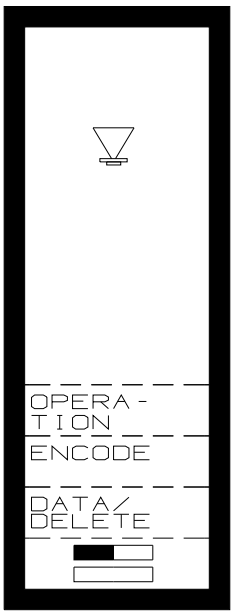
RAUCH BETA/DELTA FERTILISER DISTRIBUTOR











Select fertiliser distributor from the main menu as follows:

1. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.
2. Main menu

   - select fertiliser distributor.

3. **"ACCEPT"** or **"SELECT TYPE"**.
4. Select type.
5. It is now possible to choose between the displayed types.
6. Select fertiliser distributor type.
7. Accept type

It is now possible to select between the following functions:

OPERATION

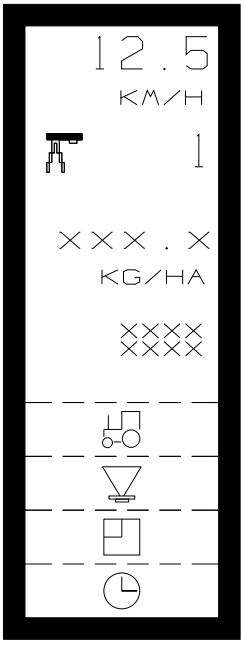
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FERTILISER DISTRIBUTOR OPERATION



FORWARD SPEED:

The primary function under fertiliser distributor is forward speed.

Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar).

SPREADER SECTION INDICATION:

The picture to the left shows a 2-section spreader with 1 section closed and 1 section open. The number of sections can be changed in **"ENCODE"**.

The figure to the right indicates which calibration is being used.

REQUIRED APPLICATION RATE:

The second function is the required application rate. If there is a difference between the right and the left-hand side, this will also be displayed.

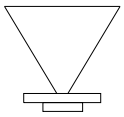
An arrow is displayed on the left of the screen indicating which way the regulating device is moving.

NOTE: Different application rates for the two sides can only be achieved via the +/- % keys.

I

When the area override sensor is activated (not counting area) "**I**" is displayed and all sections will disappear.

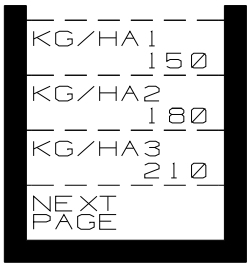
FERTILISER SPREADER FUNCTIONS:



There are 2 different function sets in this menu. The displayed set depends on whether automatic or manual application control has been selected.

The following describes each function set individually.

1. AUTOMATIC APPLICATION CONTROL.



KG/HA1

KG/HA2 These 3 application rates are set in **"ENCODE"** and can be selected under **"OPERATION"**.

KG/HA3

Pressing one of these keys displays the encoded **required** application rate. Not the **actual** application rate.

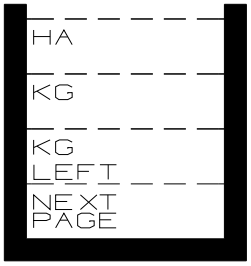
Before accurate automatic application control can take place, it is important to calibrate the system using the fertiliser to be spread.

To minimize the risk of incorrect operation/application, the following automatic warnings may be displayed.

DOSERATE

If the required application rate can not be achieved.

Pressing the **"NEXT PAGE"** key displays the next functions.



HA: Area.

KG: Consumption in KG.

KG REST: How many KG are left in the spreader at present.

HA: Area counter. Worked area since the last reset.

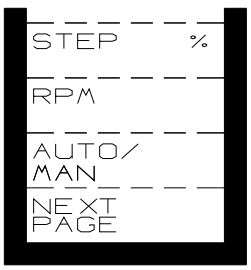
NOTE: Total area counter is found in **"DATA/DELETE"**.

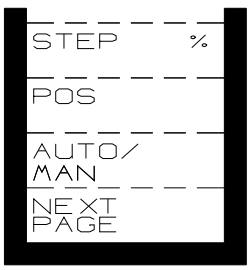
KG: Total KG used, calculated from forward speed and gate position. This function presupposes correct calibration.

NOTE: Total KG counter is found in **"DATA/DELETE"**.

KG REST: Total KG remaining in the hopper (the amount must be encoded before start).

Pressing the **"NEXT PAGE"** key displays the next functions.





STEP%: Step dose rate

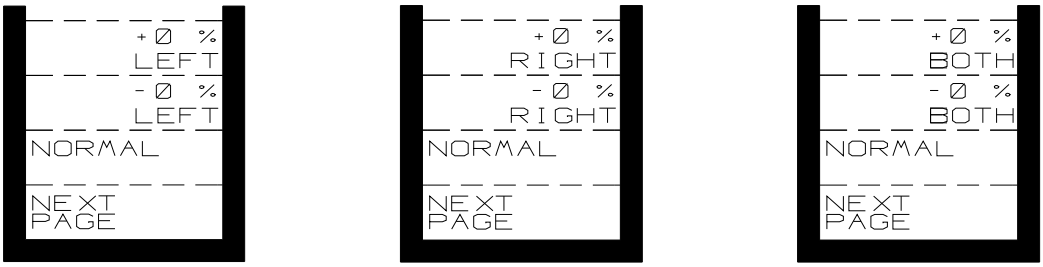
RPM/POS: RPM for the spinning discs or the position of the actuator, depending on which program has been selected (**BETA** or **DELTA**).

AUTO/MAN: Changing between automatic or manual operation.

STEP%: Step dose rate.

NOTE: Only active in automatic drift.

The application rate can be increased or decreased by an encoded percentile amount. The rate can be altered for both sides or the left-hand side or the right-hand side by pressing the **"NEXT PAGE"** key, see the following pictures:



When used, the percentile increase or reduction flashes in the lower part of the display.

NORMAL: Pressing the **"NORMAL"** key returns the application rate to normal, regardless of how many steps the rate has been increased or decreased by.

NOTE: The step dose rate screen is left by pressing the return key.

RPM: This function is displayed in the **DELTA**-Program!

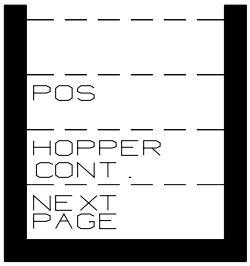
Pressing this key displays the speed of the spinning discs. The minimum and maximum disc speed can be set as a warning under **"ENCODE"**.

or

POS.: This function is displayed in the **BETA**-Program! This function is displayed in the **DELTA**-Program on the next page.
The value displayed refers to the position of the actuator (the gate opening).

AUTO/MAN: Pressing this key changes between automatic and manual application control. During manual operation **"MAN"** flashes at the bottom of the display.

Pressing the **"NEXT PAGE"** key displays the next functions.



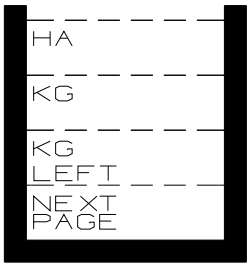
POS.: Actuator position. Reference figure for the gate position (only displayed on this page in the **DELTA** program).

HOPPER CONT.: Amount remaining in tank.

POS.: Pressing this key displays the gate position, changes between the left- and right-hand side.

HOPPER CONT.: The calculated fertiliser amount remaining in the tank. Presupposes encodement of the amount filled into the hopper before work commences.

2. MANUAL APPLICATION CONTROL



HA: Area.

KG: Consumption in KG.

KG LEFT: How many KG are left in the hopper at present.

HA: Area counter. Worked area since the last reset.

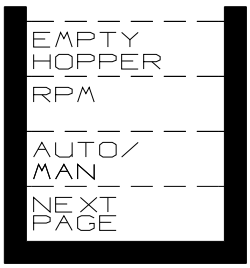
NOTE: Total area counter is found in **"DATA/DELETE"**.

KG: Total KG used calculated from forward speed and gate position. This function presupposes correct calibration.

NOTE: Total KG counter is found in **"DATA/DELETE"**.

KG REST: Total KG remaining in the hopper (the amount must be encoded before start).

Pressing the **"NEXT PAGE"** key displays the next functions.



EMPTY HOPPER: Pressing this key opens the gate completely to enable the hopper to be emptied (only found in the **BETA** program).

RPM: Disc speed.

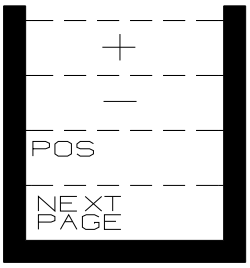
AUTO/MAN: Changing between automatic or manual operation.

EMPTY HOPPER: To ease emptying the hopper. The gate can be opened completely by pressing this key (only found in the **BETA** program).

RPM: Pressing this key displays the disc speed. The minimum and maximum speed at which an alarm may be given for disc speed is set under **"ENCODE"**.

AUTO/MAN: Pressing this key changes between automatic and manual application control. During manual operation **"MAN"** flashes at the bottom of the display.

Pressing the **"NEXT PAGE"** key displays the next functions.



+: Increased application rate.

-: Decreased application rate.

POS.: Actuator position (gate opening).

+: Each key press increases the application rate. If the key remains pressed then the application rate is increased by a suitable amount. The actual application rate can be seen on the display.

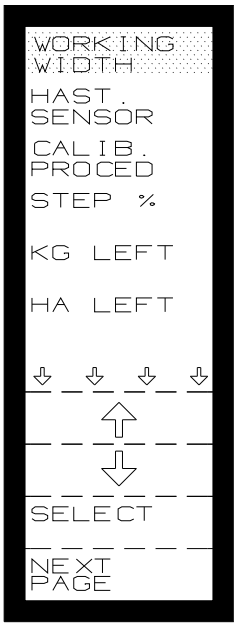
-: Each key press decreases the application rate. If the key remains pressed then the application rate is decreased by a suitable amount. The actual application rate can be seen on the display.

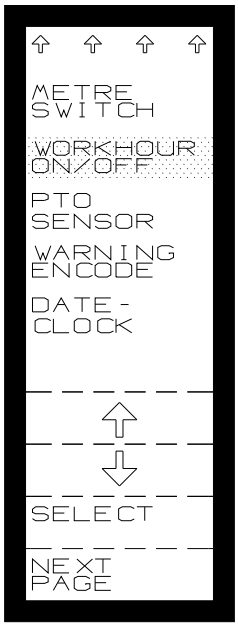
POS.: Pressing this key displays the gate position, changes between the left- and right-hand side.

FERTILISER DISTRIBUTOR ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.





WORKING WIDTH:

The working width for the spreader being used. Each spreader section is encoded individually in centimetres (section 1 is on the left-hand side of the machine)

NB: All unused sections must be encoded as 0.

The total working width can be seen at the bottom of the display under encode.

SPEED SENSOR:

The TeeJet 5000 V.4 fertiliser distributor program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR:

Speed sensor fitted on the tractor. The sensor can be built into the tractor's gearbox or rear axle as standard factory fitted or be retrofit on a wheel or drive shaft.

NOTE: Wheelslip will give inaccurate speed-readings.

WHEEL SPREADER:

Speed sensor fitted to trailed spreaders. This type of sensor will, as a rule, give a very accurate speed-reading.

RADAR:

Signal from a radar, fitted on the tractor. This type of sensor gives a very accurate speed reading on hard surfaces, but a high crop and reflecting surfaces (water) gives an inaccurate reading.

Please refer to chapter 2 for speed sensor calibration.

FERTILISER CALIBRATION PROCEDURE:

The computer allows you to "save" up to 3 different calibrations, e.g. different fertiliser types. Each calibration represents the individual test plus 3 "fixed" (but user defined) application rates, i.e. 150 kg/ha, 200 kg/ha, 250 kg/ha.

A new calibration ***must*** be carried out each time:

1. The first time the spreader is used.
2. When the working width is changed.
3. Change of fertiliser type.

A new calibration ***should*** take place when:

1. If you suspect that the flow characteristics of the fertiliser have changed, i.e. a new load.
2. Change of weather (temperature and moisture).

Even when the above factors have been taken into consideration, fertiliser calibration should be checked at regular intervals.

FERTILISER CALIBRATION:

Prepare the spreader as follows before the fertiliser calibration procedure takes place:

1. To ease the calibration procedure it is only necessary to calibrate one section of the spreader. Using the switch box open this one section and shut all of the other sections. The main on/off switch should be set to off.

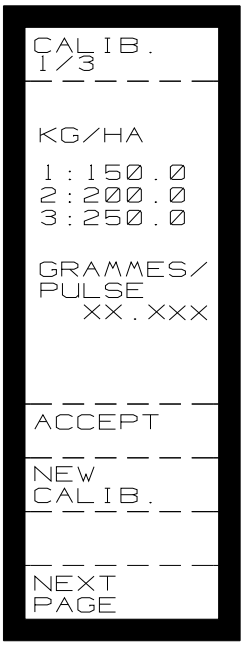
   NOTE: The calibration procedure can be done using both sections. The optimal accuracy is achieved using both sections, but an adequate accuracy can be achieved by measuring the amount of fertiliser from one section.

   If both sections are used for calibration, the total amount from both sides must be encoded.
   Do ***not*** open any other sections during the calibration procedure.
2. Three different "fixed" application rates used during operation must be encoded now. Press thereafter the **"CALIB. PROCED"** key.
3. The minimum and maximum forward speed at which the spreader will be operating must be encoded by moving the cursor and then using the numerical keypad. Encodement range **3.0 – 30.0 KPH**
4. Start the machine and let it run at the recommended speed.
5. Press the **"START"** key and the computer is ready for **CALIBRATION TEST 1**.
6. Switch the main on/off switch to ON.
   The **TeeJet 5000** will count seconds under the test.
   To ensure accurate calibration, use as much fertiliser as possible.
7. When a suitable amount has been released switch the spreader off.
8. Weigh the released fertiliser as accurately as possible, remember to deduct the weight of the bucket. Encode the amount with 1 decimal using the numerical keypad.
9. Press the **"CALIB. TEST 2"** key and the computer is ready for calibration test 2, proceed as described for calibration test 1 (steps 4-7).
10. Press the **"CALC. AND SAVE"** Key and it is possible to save the calibration result in 1 of 3 positions. Select which position to save the result in using the arrow keys, press thereafter the **"SELECT"** key.

If the "CALCULATE" key is pressed, the calibration will be used until another calibration procedure takes place or another calibration (previously saved) is selected.

If the metered/encoded amounts from the calibration procedure are not accurate enough for the TeeJet 5000, a warning will be given and the calibration procedure must be carried out again.

If there are previously saved calibration results the procedure is as follows:



1. Press the **"CALIB. PROCED."** key and the TeeJet5000 displays the picture to the left. It is possible to page through the saved calibration results using the **"NEXT PAGE"** key.
2. Pressing the **"ACCEPT"** key uses the selected calibration.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

KG/LEFT:

The amount filled into the spreader must be encoded here; to be able to see how much fertiliser is left in the hopper.

NOTE: If there is some fertiliser left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. left.

KG LEFT can be set as an alarm

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

KG LEFT: Warning **ON/OFF** and amount of kg (min.) at which warning is wanted.

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

OFFSET

Pressing the ”HOLD” key for approx. 5 seconds, before accepting the selected fertiliser distributor type allows you to encode an OFFSET value.

This OFFSET value is used to alter the applied amount in comparison to the calibrated amount.

Example:

After calibration it is shown, when spreading, that the spread amount varies in comparison to the calibration. This problem occurs because the spinner discs ”suck” fertiliser out of the hopper.

The application rate is encoded to 200 kg/ha, but after spreading 10 ha, 2100 kg has been spread; this difference of 100 kg is equal to 5%.

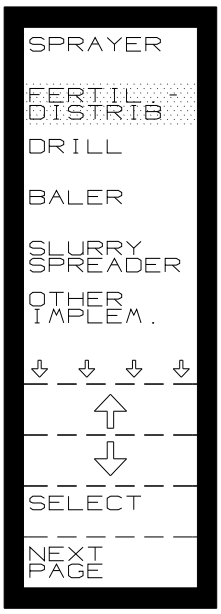
Setting the OFFSET value ”moves” the calibration so that the spread amount is the same as the calibrated application rate. In the above example, the OFFSET value should be changed to 0.95.

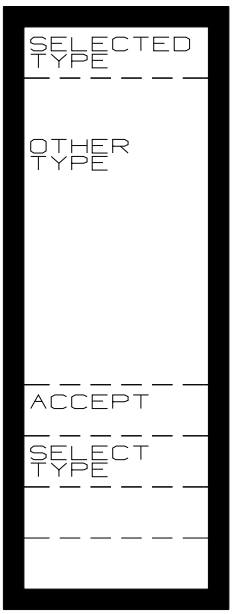
If the amount spread was 5% low in the above example then the OFFSET value should be altered to 1.05.

Fertiliser distributor, Rauch Axera H

RAUCH AXERA H FERTILISER DISTRIBUTOR 4.114
FERTILISER DISTRIBUTOR OPERATION 4.115
FERTILISER SPREADER FUNCTIONS: 4.115
1. AUTOMATIC APPLICATION CONTROL. 4.116
2. MANUAL APPLICATION CONTROL 4.118
FERTILISER DISTRIBUTOR ENCODE 4.119
WORKING WIDTH: 4.119
SPEED SENSOR: 4.120
WHEEL TRACTOR: 4.120
WHEEL SPREADER: 4.120
RADAR: 4.120
FERTILISER CALIBRATION PROCEDURE: 4.120
FERTILISER CALIBRATION: 4.121
STEP %: 4.122
KG/LEFT: 4.122
HA LEFT 4.122
METRE SWITCH 4.122
WORK HOUR ON/OFF 4.122
PTO SENSOR 4.123
WARNING ENCODE 4.123
DATE - CLOCK: 4.123
OFFSET 4.123

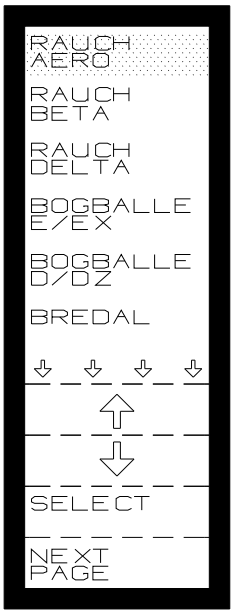
RAUCH AXERA H FERTILISER DISTRIBUTOR

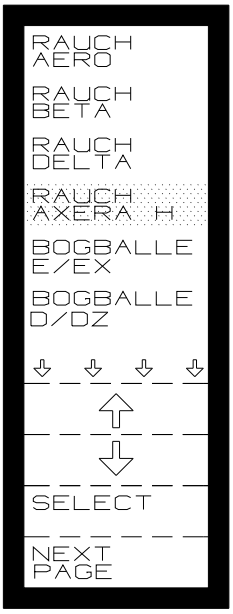




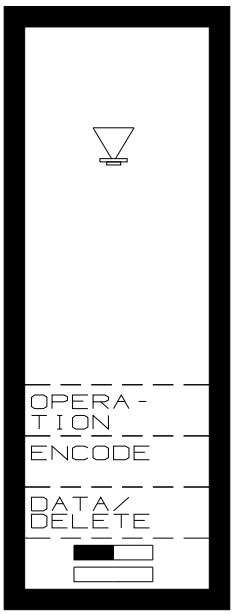
Select fertiliser distributor from the main menu as follows:

1. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.
2. Main menu
   – select fertiliser distributor.
3. **"ACCEPT"** or **"SELECT TYPE"**.





4. Select type.
5. It is now possible to choose between the displayed types.
6. Select fertiliser distributor type.
7. Accept type



It is now possible to select between the following functions:

OPERATION

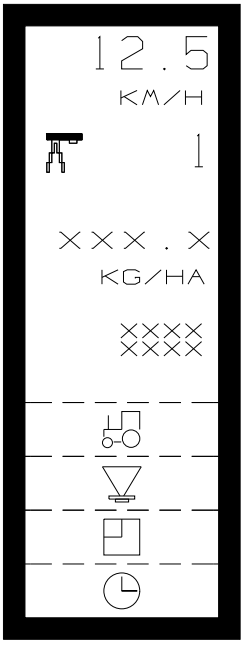
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FERTILISER DISTRIBUTOR OPERATION



FORWARD SPEED:

The primary function under fertiliser distributor is forward speed.

Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar).

SPREADER SECTION INDICATION:

The picture to the left shows a 2-section spreader with 1 section closed and 1 section open. The number of sections can be changed in **"ENCODE"**.

The figure to the right indicates which calibration is being used.

REQUIRED APPLICATION RATE:

The second function is the required application rate. If there is a difference between the right and the left-hand side, this will also be displayed.

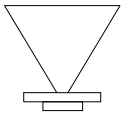
An arrow is displayed on the left of the screen indicating which way the regulating device is moving.

NOTE: Different application rates for the two sides can only be achieved via the +/- % keys.

I

When the area override sensor is activated (not counting area) "**I**" is displayed and all sections will disappear.

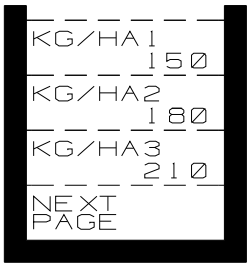
FERTILISER SPREADER FUNCTIONS:



There are 2 different function sets in this menu. The displayed set depends on whether automatic or manual application control has been selected.

The following describes each function set individually.

1. AUTOMATIC APPLICATION CONTROL.



KG/HA1

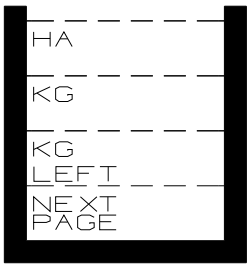
KG/HA2 These 3 application rates are set in **"ENCODE"** and can be selected under **"OPERATION"**.

KG/HA3

Pressing one of these keys displays the encoded **required** application rate. Not the **actual** application rate.

Before accurate automatic application control can take place, it is important to calibrate the system using the fertiliser to be spread.

Pressing the **"NEXT PAGE"** key displays the next functions.



HA: Area.

KG: Consumption in KG.

KG REST: How many KG are left in the spreader at present.

HA: Area counter. Worked area since the last reset.

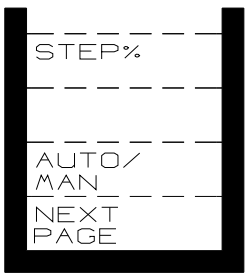
NOTE: Total area counter is found in **"DATA/DELETE"**.

KG: Total KG used, calculated from forward speed and gate position. This function presupposes correct calibration.

NOTE: Total KG counter is found in **"DATA/DELETE"**.

KG LEFT: Total KG remaining in the hopper (the amount must be encoded before start).

Pressing the **"NEXT PAGE"** key displays the next functions.



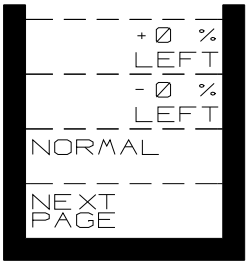
STEP%: Step dose rate.

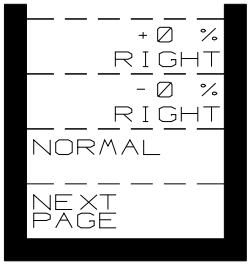
AUTO/MAN: Change between automatic and manual application control.

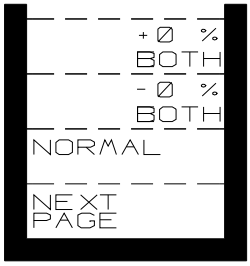
STEP%: Step dose rate.

NOTE: Only active in automatic drift.

The application rate can be increased or decreased by an encoded percentile amount. The rate can be altered for both sides or the left-hand side or the right-hand side by pressing the **"NEXT PAGE"** key, see the following pictures:







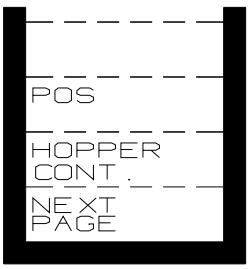
When used, the percentile increase or reduction flashes in the lower part of the display.

NORMAL: Pressing the **"NORMAL"** key returns the application rate to normal, regardless of how many steps the rate has been increased or decreased by.

NOTE: The step dose rate screen is left by pressing the return key.

AUTO/MAN: Pressing this key changes between automatic and manual application control. During manual operation **"MAN"** flashes at the bottom of the display.

Pressing the **"NEXT PAGE"** key displays the next available functions.



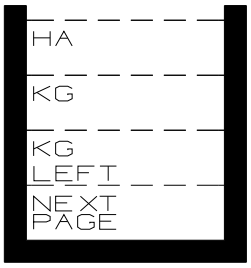
POS.: Actuator position. Reference figure for the gate position.

HOPPER CONT.: Amount remaining in tank.

POS.: Pressing this key displays the gate position, changes between the left- and right-hand side.

HOPPER CONT.: The calculated fertiliser amount remaining in the tank. Presupposes encodement of the amount filled into the hopper before work commences.

2. MANUAL APPLICATION CONTROL



HA: Area.

KG: Consumption in KG.

KG LEFT: How many KG are left in the hopper at present.

HA: Area counter. Worked area since the last reset.

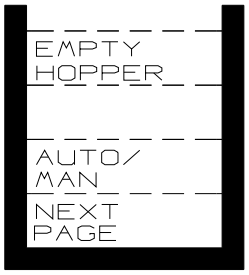
NOTE: Total area counter is found in **"DATA/DELETE"**.

KG: Total KG used calculated from forward speed and gate position. This function presupposes correct calibration.

NOTE: Total KG counter is found in **"DATA/DELETE"**.

KG REST: Total KG remaining in the hopper (the amount must be encoded before start).

Pressing the **"NEXT PAGE"** key displays the next functions.



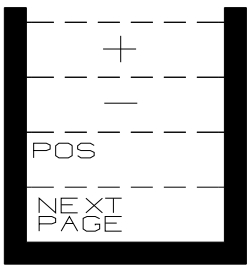
EMPTY HOPPER: Pressing this key opens the gate completely to enable the hopper to be emptied

AUTO/MAN: Changing between automatic or manual operation.

EMPTY HOPPER: To ease emptying the hopper. The gate can be opened completely by pressing this key.

AUTO/MAN: Pressing this key changes between automatic and manual application control. During manual operation **"MAN"** flashes at the bottom of the display.

Pressing the **"NEXT PAGE"** key displays the next functions.



+: Increased application rate.

-: Decreased application rate.

POS.: Actuator position (gate opening).

+: Each key press increases the application rate. If the key remains pressed then the application rate is increased by a suitable amount. The actual application rate can be seen on the display.

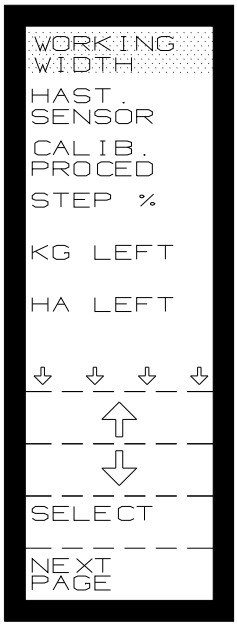
-: Each key press decreases the application rate. If the key remains pressed then the application rate is decreased by a suitable amount. The actual application rate can be seen on the display.

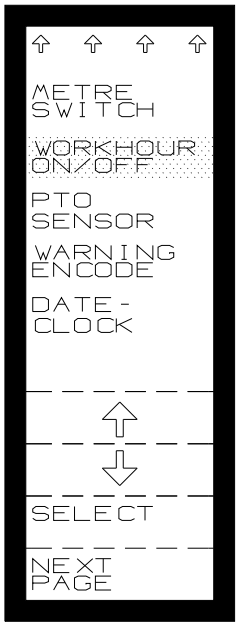
POS.: Pressing this key displays the gate position, changes between the left- and right-hand side.

FERTILISER DISTRIBUTOR ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.





WORKING WIDTH:

The working width for the spreader used. Each spreader section is encoded individually in centimetres (section 1 is on the left-hand side of the machine)

NB: All unused sections must be encoded as 0.

The total working width can be seen at the bottom of the display under encode.

SPEED SENSOR:

The TeeJet 5000 V.4 fertiliser distributor program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR:

Speed sensor fitted on the tractor. The sensor can be built into the tractor's gearbox or rear axle as standard factory fitted or be retrofit on a wheel or drive shaft.

NOTE: Wheelslip will give inaccurate speed-readings.

WHEEL SPREADER:

Speed sensor fitted to trailed spreaders. This type of sensor will, as a rule, give a very accurate speed-reading.

RADAR:

Signal from a radar, fitted on the tractor. This type of sensor gives a very accurate speed reading on hard surfaces, but a high crop and reflecting surfaces (water) gives an inaccurate reading.

Please refer to chapter 2 for speed sensor calibration.

FERTILISER CALIBRATION PROCEDURE:

Three fixed application rates can be encoded and the calibration procedure can be done when this key is pressed

A new calibration ***must*** be carried out each time:

1. The first time the spreader is used.
2. When the working width is changed.
3. Change of fertiliser type.

A new calibration ***should*** take place when:

1. If you suspect that the flow characteristics of the fertiliser have changed, i.e. a new load.
2. Change of weather (temperature and moisture).

Even when the above factors have been taken into consideration, fertiliser calibration should be checked at regular intervals.

FERTILISER CALIBRATION:

Prepare the spreader as follows before the fertiliser calibration procedure takes place:

1. To ease the calibration procedure it is only necessary to calibrate one section of the spreader. Using the switch box open this one section and shut all of the other sections. The main on/off switch should be set to off.

   NOTE: The calibration procedure can be done using both sections. The optimal accuracy is achieved using both sections, but an adequate accuracy can be achieved by measuring the amount of fertiliser from one section.

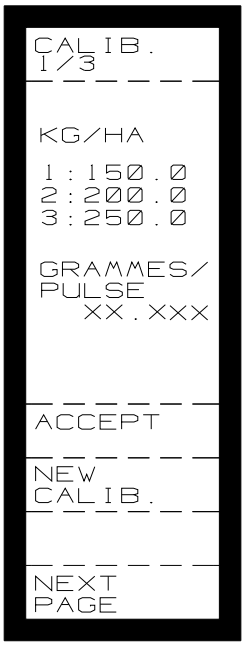
   If both sections are used for calibration, the total amount from both sides must be encoded.
   Do ***not*** open any other sections during the calibration procedure.

2. 3 different “fixed” application rates used during operation must be encoded now. Press thereafter the **“CALIB. PROCED”** key.
3. The minimum and maximum forward speed at which the spreader will be operating must be encoded by moving the cursor and then using the numerical keypad. Encodement range **3.0 – 30.0 KPH**
4. Start the machine and let it run at the recommended speed.
5. Press the **“START”** key and the computer is ready for **CALIBRATION TEST 1**.
6. Switch the main on/off switch to ON.
   The **TeeJet 5000** will count seconds under the test.
   To ensure accurate calibration, use as much fertiliser as possible.
7. When a suitable amount has been released switch the spreader off.
8. Weigh the released fertiliser as accurately as possible, remember to deduct the weight of the bucket. Encode the amount with 1 decimal using the numerical keypad.
9. Press the **“CALIB. TEST 2”** key and the computer is ready for calibration test 2, proceed as described for calibration test 1 (steps 4-7).
10. Press the **“CALC. AND SAVE”** Key and it is possible to save the calibration result in 1 of 3 positions. Select which position to save the result in using the arrow keys, press thereafter the **“SELECT”** key.

If the “CALCULATE” key is pressed, the calibration will be used until another calibration procedure takes place or another calibration (previously saved) is selected.

If the metered/encoded amounts from the calibration procedure are not accurate enough for the TeeJet 5000, an warning will be given and the calibration procedure must be carried out again.

If there are previously saved calibration results the procedure is as follows:



1. Press the **"CALIB. PROCED."** key and the TeeJet5000 displays the picture to the left. It is possible to page through the saved calibration results using the **"NEXT PAGE"** key.
2. Pressing the **"ACCEPT"** key uses the selected calibration.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

KG/LEFT:

The amount filled into the spreader must be encoded here; to be able to see how much fertiliser is left in the hopper.

NOTE: If there is some fertiliser left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. left.

KG LEFT can be set as an alarm

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

PTO SENSOR

The number of pulses per revolution for the PTO shaft.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO:	Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.
KM/H:	Warning **ON/OFF** and **MAX/MIN**-limits for speed.
SLIP:	Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.
RPM 1	Warning **ON/OFF** and **MAX/MIN**-limits for PTO speed.
KG LEFT:	Warning **ON/OFF** and amount of kg (min.) at which warning is wanted.
NB:	The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

OFFSET

Pressing the ”HOLD” key for approx. 5 seconds, before accepting the selected fertiliser distributor type allows you to encode an OFFSET value.

This OFFSET value is used to alter the applied amount in comparison to the calibrated amount.

Example:

After calibration it is shown, when spreading, that the spread amount varies in comparison to the calibration. This problem occurs because the spinner discs ”suck” fertiliser out of the hopper.

The application rate is encoded to 200 kg/ha, but after spreading 10 ha, 2100 kg has been spread, this difference of 100 kg is equal to 5%.

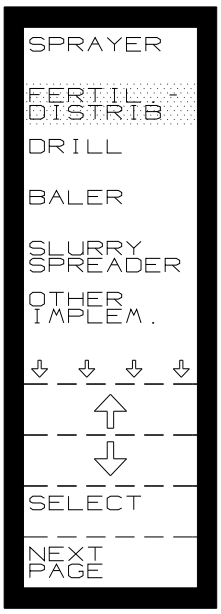
Setting the OFFSET value ”moves” the calibration so that the spread amount is the same as the calibrated application rate. In the above example, the OFFSET value should be changed to 0.95.

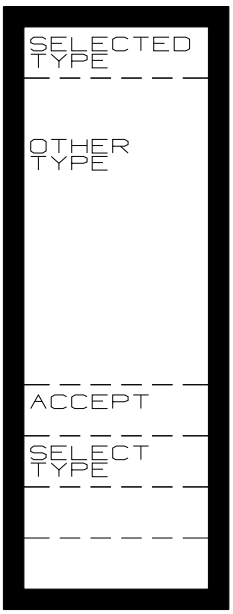
If the amount spread was 5% low in the above example then the OFFSET value should be altered to 1.05.

Fertiliser distributor, Reiβl

FERTILISER DISTRIBUTOR 4.126
FERTILISER DISTRIBUTOR OPERATION (REIβL) 4.127
FERTILISER DISTRIBUTOR FUNCTIONS: 4.127
SECTION ON/OFF: 4.128
FERTILISER DISTRIBUTOR ENCODE 4.129
DOSE RATE 4.129
LOGGING 4.129
TON LEFT 4.130
HA LEFT 4.130
CALIBRATION 4.130
AUTOMATIC CALIBRATION: 4.130
MANUAL CALIBRATION: 4.131
DISTRIBUTOR WIDTH 4.131
STEP% 4.131
DRIVE FACTOR 4.131
REVS. SENSOR 4.132
FORWARD SPEED SENSOR 4.132
WHEEL TRACTOR: 4.132
WHEEL SPREADER: 4.132
RADAR: 4.132
IMPLEMENT SENSOR 4.133
WORK HOUR ON/OFF 4.133
METRE SWITCH 4.133
SYSTEM B PLUG 4.133
WARNING ENCODE 4.134
DATE – CLOCK 4.134

FERTILISER DISTRIBUTOR



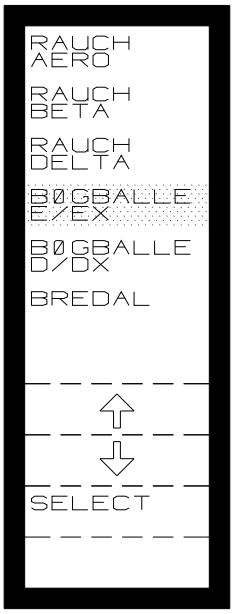


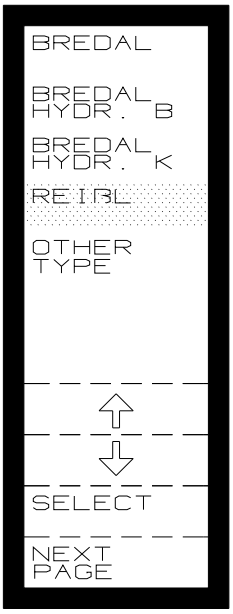
Select fertiliser distributor from the main menu as follows:

1. Move the cursor, using the arrow keys, to **"FERTIL. DISTRIB."** Press the **"SELECT"** key.

2. Main menu
   – select fertiliser distributor.

3. **"ACCEPT"** or **"SELECT TYPE"**.



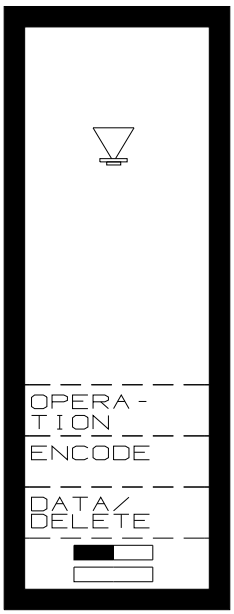


4. Select type.

5. It is now possible to choose between the displayed types.

6. Select fertiliser distributor type.

7. Accept type



It is now possible to select between the following functions:

OPERATION

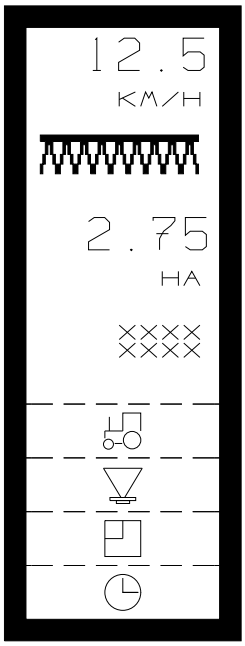
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FERTILISER DISTRIBUTOR OPERATION (REIβL)



FORWARD SPEED:

The primary function under fertiliser distributor is forward speed.

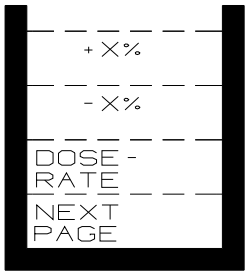
Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel spreader or radar).

APPLICATION RATE IN TON/HA:

The present application rate in Ton/ha. Calculated from the number of pulses from the floor chain and area measurement (speed and working width). It is therefore necessary to drive and spread at the same time to get a reading for this function.

NOTE! Correct calibration of forward speed and weight per pulse plus correctly entered working width are essential for accurate operation.

FERTILISER DISTRIBUTOR FUNCTIONS:



+XX%: Step dosage. Increase.

-XX%: Step dosage. Reduction.

DOSE RATE/ NORMAL: Encoding the required application rate or return to normal after using the step key.

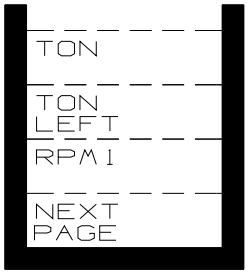
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step function has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next functions.



TON: Consumption in tons since the last reset in DATA/DELETE.

TON LEFT: Tons remaining in the hopper (amount filled must be encoded before start).

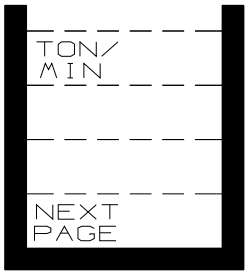
RPM 1: Shaft speed of axle 1.

TON: Tons consumed, measured via the pulse generator on the floor chain. This function presupposes correct calibration of the system (amount per pulse).

TON LEFT: The amount remaining in the hopper. Presupposes encoding the amount filled before start (done in encode).

RPM 1: Shaft speed of axle no. 1.

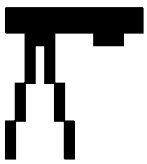
Pressing the **"NEXT PAGE"** key displays the last available functions.



TON/MIN: Consumption (flow) in tons per minute.

Pressing the **"NEXT PAGE"** key displays the first available functions.

SECTION ON/OFF:



The picture to the left shows a spreader with 2 sections encoded, where one is open and one is closed. The total number of sections is set under encode.

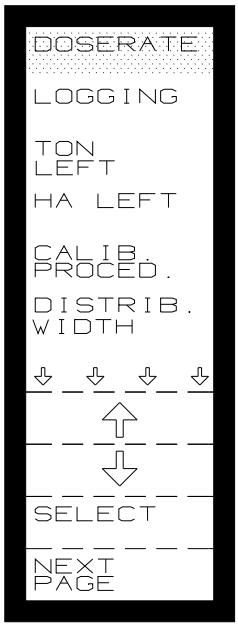
I

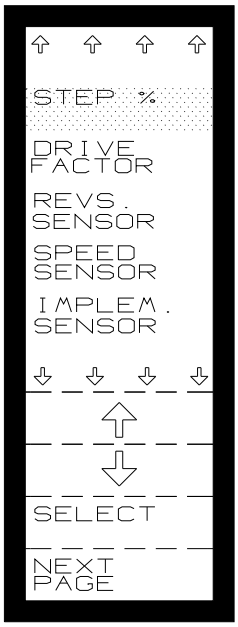
When the area override sensor is activated (not counting area) **"I"** is displayed and all sections will disappear.

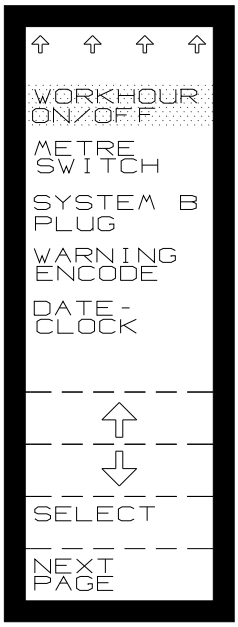
FERTILISER DISTRIBUTOR ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.







DOSE RATE

The required application rate is encoded in **TON/HA**.

LOGGING

The date and flow (tons/min.) are registered every other minute. Registration of data will only take place if; the spreader is operating (area override sensor not activated), and the consumption is minimum 0.1 ton per minute.

Pressing the **"LOG DATA"** key displays the data that has been registered (this key is only displayed if there is registered data).

NOTE! These registrations can NOT be deleted, and data is logged from position 1 again when the memory is full.

The maximum allowed flow (ton/min.) is encoded by pressing the **"ENCODE DOS."** Key, and thereafter by using the numerical keys.

If the maximum encoded flow is exceeded an alarm will sound. Pressing the **"OK"** key cancels the warning. The warning will only be given again if the flow (ton/min) drops under and thereafter exceeds the encoded max. flow.

TON LEFT

The amount filled into the hopper must be encoded here; to be able to see how much fertiliser is left in the hopper.

NOTE! If there is some fertiliser left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. Left.

HA LEFT

Encode the size of the field to be spread here. END TIME is calculated from this encodement.

CALIBRATION

Particular attention must be paid to the calibration procedure, as this is the basis for correct operation.

The amount is measured via a pulse generator mounted on the floor chain.

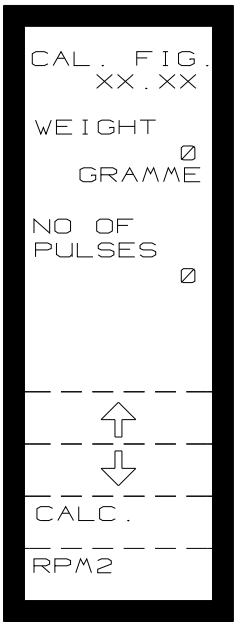
The system must be calibrated to ensure correct operation. There are 2 methods available to find the calibration figure, an automatic method and a manual method.

AUTOMATIC CALIBRATION:

This calibration procedure is carried out at the same time as the normal spreader calibration. The principle works by counting the number of pulses given from the sensor during spreader calibration. When the calibration is finished the amount released is weighed and encoded, the computer can now calculate the amount released per pulse.

Procedure:

Prepare the spreader for calibration.



1. The picture to the left is displayed when **CALIB. PROCED.** has been selected.
2. NO OF PULSES must be 0 before the calibration procedure is continued. If the number is higher then press the RETURN key and select CALIB. PROCED. again.
3. Pressing the **"RPM 2"** key allows you to adjust the speed of the motor that drives the floor chain, pressing the **"+"** key increases the chain speed and pressing **"-"** reduces the chain speed. The speed of the floor chain is displayed.
4. Set the chain speed to 0 using the **"-"** key when a suitable amount has been released and press **"OK"**. Move the cursor to WEIGHT and encoded the amount released using the numerical keys.
   NOTE! *The pulse counter must have counted a number of pulses*.
5. Press the flashing **"CALC."** Key and the calibration procedure is finished. The CAL. FIG., which is displayed at the top of the screen, can be noted.

MANUAL CALIBRATION:

The CAL. FIG. Can be calculated manually as follows:

$$\text{CALIBRATION FIGURE} = \frac{\text{Volume per revolution x volume weight}}{\text{Pulses per revolution}}$$

NOTE!

If after some time it is found that the total amount spread is not the same as the computer has calculated, check the machine's settings, that the calibration and encodements are correct.

If all the encodements are correct the following can be done:

If the fertiliser being used has been stored for a long time, or is damper or drier than normal then these conditions can vary from the time of calibration to the present.

This can be changed by altering the encoded/calculated CAL. FIG. by the amount in percent that the present application varies from the required application.

Lower CAL. FIG. = higher application

DISTRIBUTOR WIDTH

The working width for the spreader used. Each spreader section is encoded individually in centimetres (section 1 is the left-hand side of the machine).

NOTE! All unused sections must be encoded as 0.

The total working width can be seen at the bottom of the display whilst encoding.

STEP%

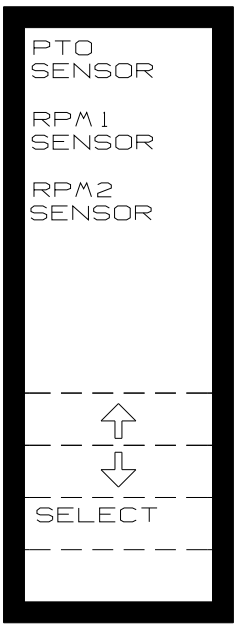
Encode the size of the steps for the "STEP%" function. This % value is the same for both + and -. The maximum step size is 99%.

DRIVE FACTOR

The speed at which the regulating system adjusts to the correct position. Min. = 1 and Max. = 500. Normal = 100.

If the regulation system adjusts to the correct application rate too slowly, then the drive factor should be increased. If the system is constantly searching up & down for the correct application rate then reduce the drive factor.

REVS. SENSOR



Encode the number of pulses per revolution for the individual RPM sensors.

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 fertiliser distributor program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR:

Speed sensor fitted on the tractor. The sensor can be built into the tractor's gearbox or rear axle as standard factory fitted or be retrofit on a wheel or drive shaft.

NOTE: Wheelslip will give inaccurate speed-readings.

WHEEL SPREADER:

Speed sensor fitted to trailed spreaders. This type of sensor will, as a rule, give a very accurate speed-reading.

RADAR:

Signal from a radar, fitted on the tractor. This type of sensor gives a very accurate speed reading on hard surfaces, but a high crop and reflecting surfaces (water) can give an inaccurate reading.

Please refer to chapter 2 for speed sensor calibration.

IMPLEMENT SENSOR

The implement sensor (area override) is the sensor that starts and stops the area counter. There are 3 possibilities in this program:

LIFT

FERTILISER DISTRIBUTOR

PTO

The selected sensor is displayed on the screen.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

METRE SWITCH

Select whether the distance counter is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

SYSTEM B PLUG

There are 2 system plugs on the back of the TeeJet 5000.

The System **A** plug is compatible with *older* TeeJet 5000 versions.

The System **B** plug is for **new** connections.

ACTIVE 0 VOLT:	The individual sections are opened with 0V.
ACTIVE 12 VOLT:	The individual sections are opened with 12V.
ON/OFF:	**ON:** The system **B** plug is ***used***.
	OFF: The system **B** plug is ***not used***.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

MIS-DOSERATE: Warning **ON/OFF** and MAX difference in **+/-%**

TON LEFT: Warning **ON/OFF** and amount of ton (min.) at which warning is wanted.

RPM 1: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.

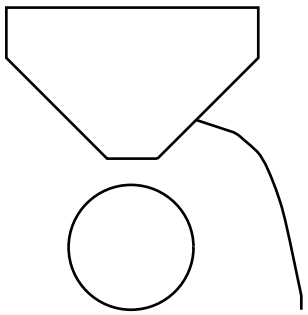
NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1.

DATE – CLOCK

Set the date and time in this menu:

HOURS – MINUTES – YEAR – MONTH – DAY.

Seed drill



SEED DRILL, OTHER TYPE..... 5.1
SEED DRILL, NORDSTEN 5.15
SEED DRILL, LEMKEN..... 5.31
SEED DRILL, SIMBA 5.61

Seed drill, Other type

DRILL (OTHER TYPE) 5.2
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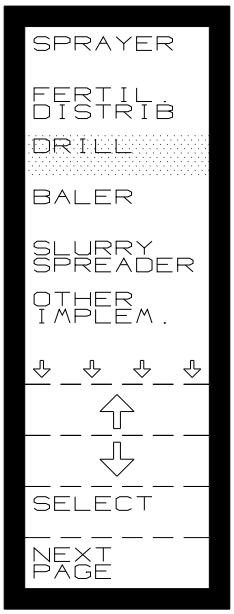
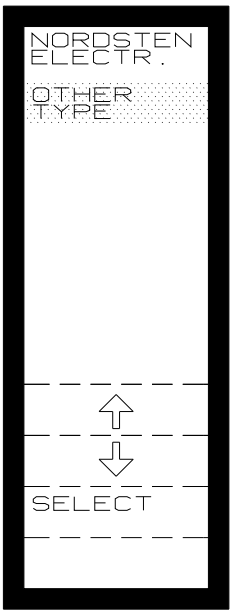
RADAR 5.12
IMPLEMENT SENSOR 5.12
METRE SWITCH 5.12
WORK HOUR ON/OFF 5.12
REVS. SENSOR 5.13
WARNING ENCODE 5.14
DATE - CLOCK: 5.14

DRILL (OTHER TYPE)



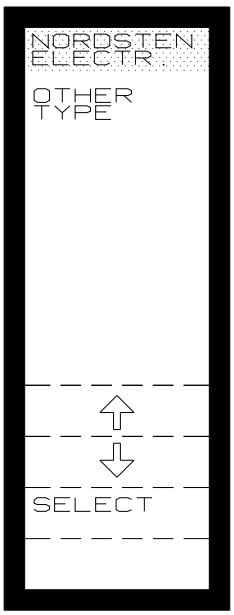


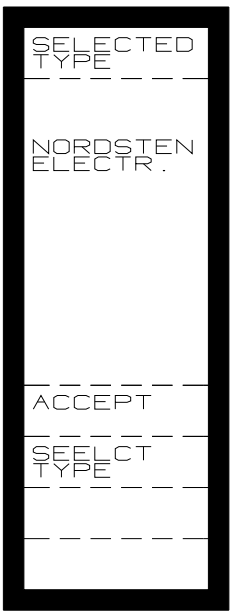
Select seed drill from the main menu as follows:

1. Move the cursor using the arrow keys to **"DRILL"** when this is done press the **"SELECT"** key.

2. Main menu: Drill.

3. **"ACCEPT"** the selected type or choose another type.





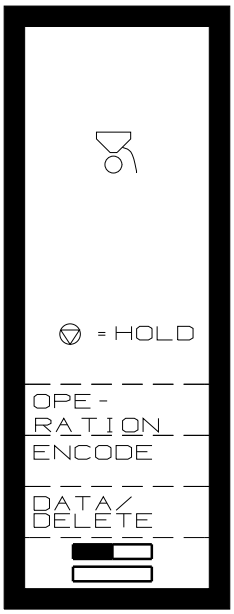
4. Select type.

5. It is now possible to choose between the displayed types.

6. Select the drill type.

7. ACCEPT

NOTE: NORDSTEN ELECTR. Is only for NORDSTEN drill with electronic gearboxes.



It is now possible to select between the following functions:

OPERATION

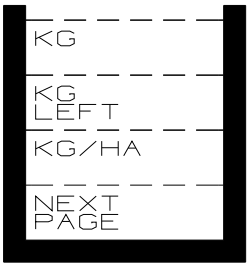
ENCODE

DATA/DELETE

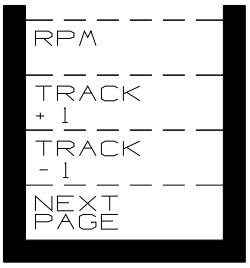
TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

SEED DRILL OPERATION (OTHER TYPE)



Move between the two pages by pressing **"NEXT PAGE"**.



KG: The amount sown in KG, measured by a sensor fitted on the drill shaft. Calibrating the system is necessary to ensure correct operation and this is done under **"ENCODE"**.

KG LEFT: The amount in KG of seed left in the hopper (the amount filled in must be encoded before work commences).

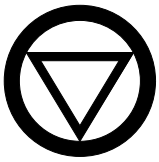
KG/HA: Seed rate in KG/HA.

RPM: RPM of an axle when this has been selected.

TRACK+1: Moves one step forward in the tramline rhythm.

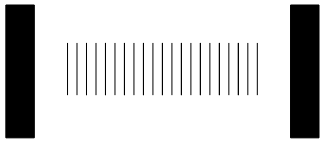
TRACK-1: Moves one step backwards in the tramline rhythm.

HOLD KEY



Press if the present bout is not required in the selected rhythm. This function "holds" the present status regardless of how many times the drill is raised. When this function is activated, **"HOLD"** flashes on the display.

TRAMLINE INDICATOR



No tramlines are made.

Tramlines are made.

TRAMLINE CONTROL

The primary function for seed drills is the track number. The following picture is displayed:

Bout number Track number

The bout number is the present bout being driven in the field (counts 1 each time the drill is lifted). The track number is what has been encoded (see **"ENCODE"**).

The TeeJet 5000 has 2 different methods of controlling the tramlines (**A** and **B**). The method is selected under **"ENCODE"**:

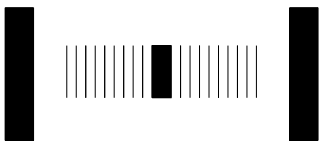
METHOD A

This method is a new and logical method of making tramlines.

If the tramlines are to be made on uneven bouts (3,5,7, or 9) then the tramlines will **always** be made in the middle bout. Two clutches are fitted to the middle of the drill. See the drawing for **METHOD A UNEVEN**.

If the tramlines are to be made on even bouts (2,4,6, or 8), then the tramlines are split between the 2 middle bouts. The field must be sown up and down as there is only 1 clutch fitted on one side of the seed drill. See the drawing for **METHOD A EVEN**.

The tramlines are displayed for this method thus:



METHOD B

This method is older and better known. Tramlines are made when the present bout is the same as the track number. The operator must know how the field has been started.

If tramlining is required in on uneven bouts (3,5,7, or 9) the system works well. Tramlines are made, using 2 clutches fitted in the middle of the seed drill, when the present bout number is the same as the encoded track number. See the drawing **METHOD B UNEVEN**.

If the tramlines are to be made on even bouts (2,4,6, or 8), then the operator must drive around the field with only one half of the seed drill open. This is necessary, as the tramlines cannot be split over 2 bouts. The clutches are fitted in the middle of the seed drill, and the tramlines are made in one bout. See the drawing **METHOD B EVEN**.

FORWARD SPEED

The forward speed is displayed in kilometres per hour with 1 decimal. The forward speed is calculated from signals received from the sensor selected under **"ENCODE"** (wheel tractor or radar).

METHOD A UNEVEN

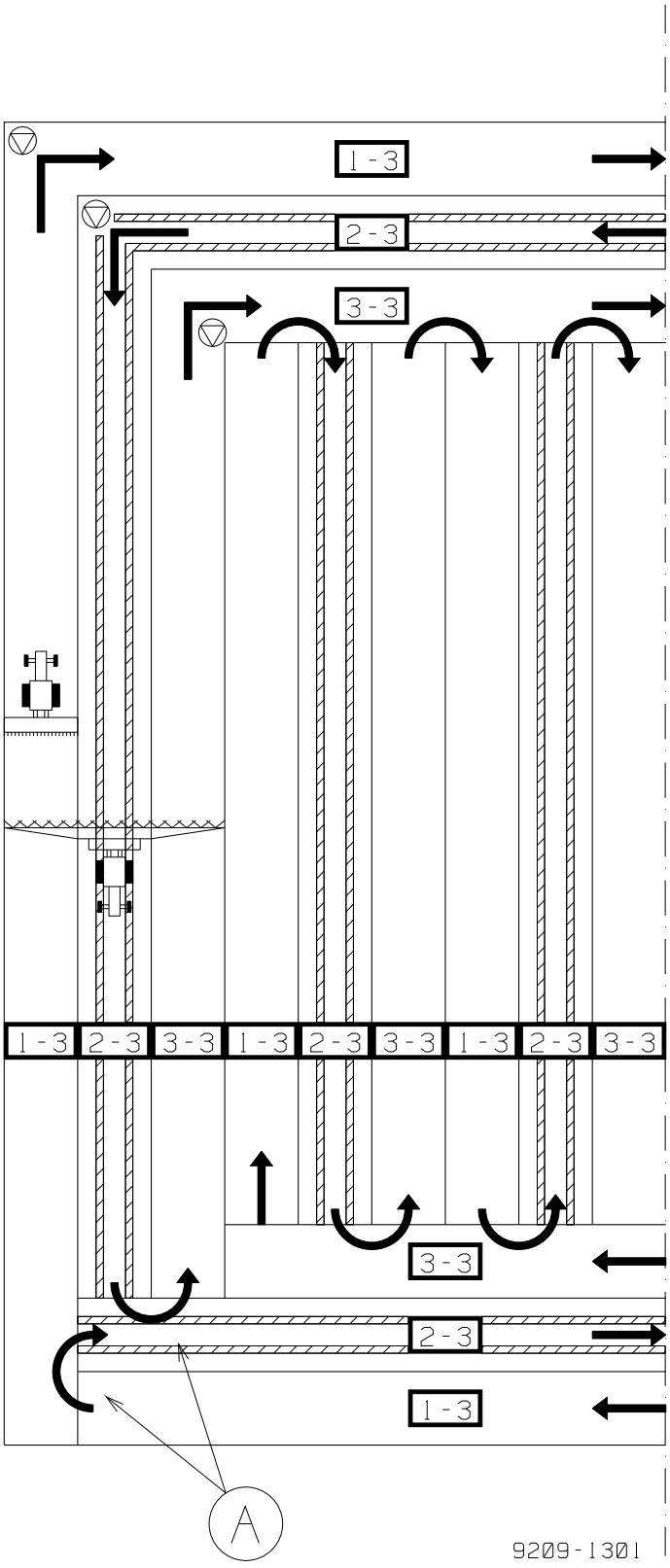
In the example to the right the encoded rhythm is 3. Two clutches are fitted in the middle of the drill.

NB!

Tramlines are made in bout number 2 when a rhythm (track number) of 3 is encoded.

Note where, in the first 3 bouts around the field, the present bout **should** (A) be counted and where the bout **should not** be counted. After each trip around the field the machine drives in the opposite direction.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



METHOD A EVEN

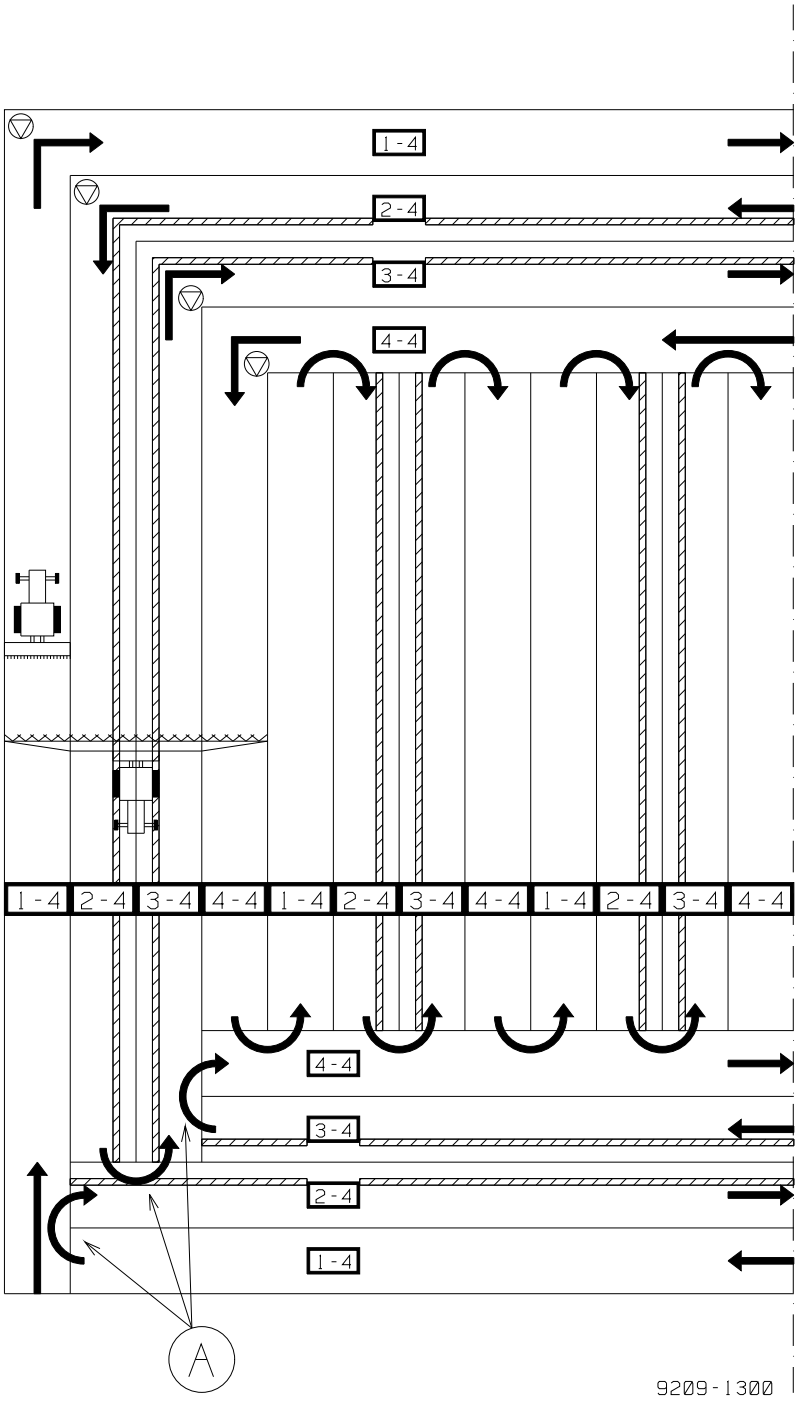
A rhythm of 4 is encoded in this example. A single clutch is fitted on the left-hand side of the seed drill.

NB!

Tramlines are made in bout numbers 2 and 3 (split), when a rhythm of 4 is encoded.

Note where, in the first 4 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners). After each trip around the field the machine is turned around, and is driven in the opposite direction.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



METHOD B UNEVEN

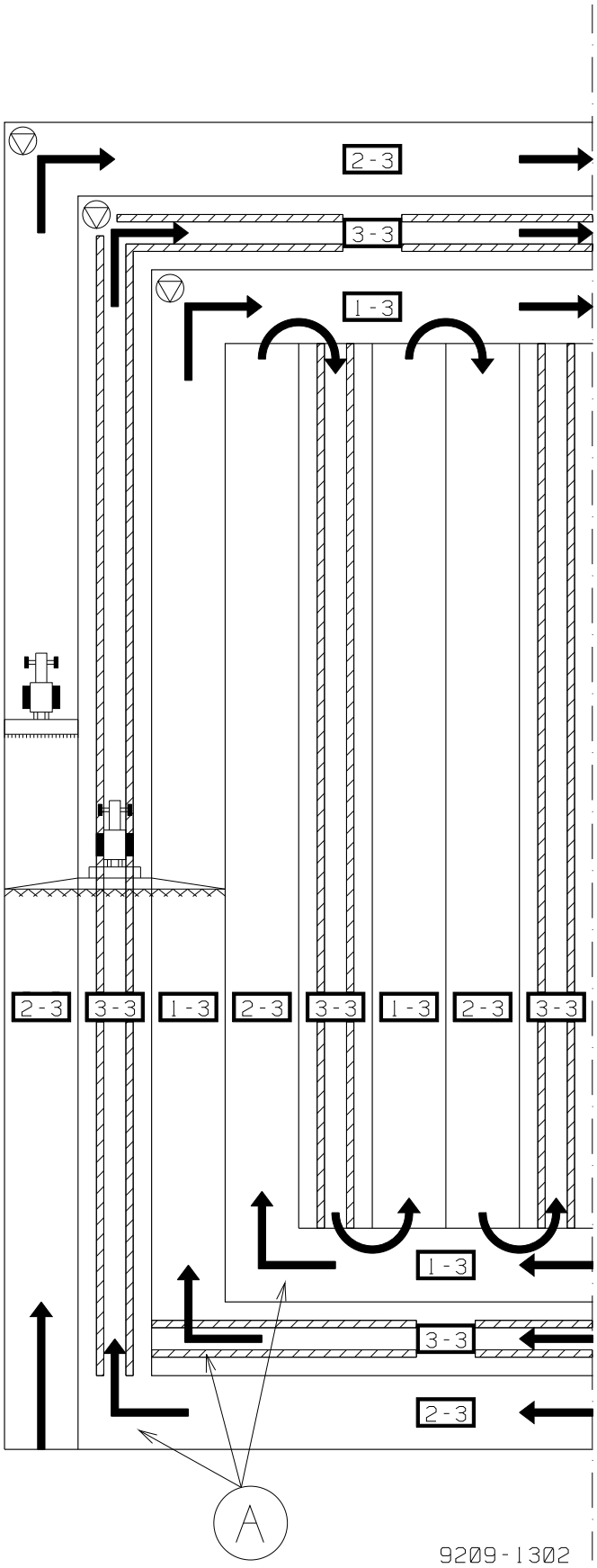
A rhythm of 3 is encoded in this example and there are 2 clutches fitted in the middle of the seed drill.

NB!

Tramlines are made when the present bout is the same as the encoded rhythm (track number).

Note where, in the first 3 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners).

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



METHOD B EVEN

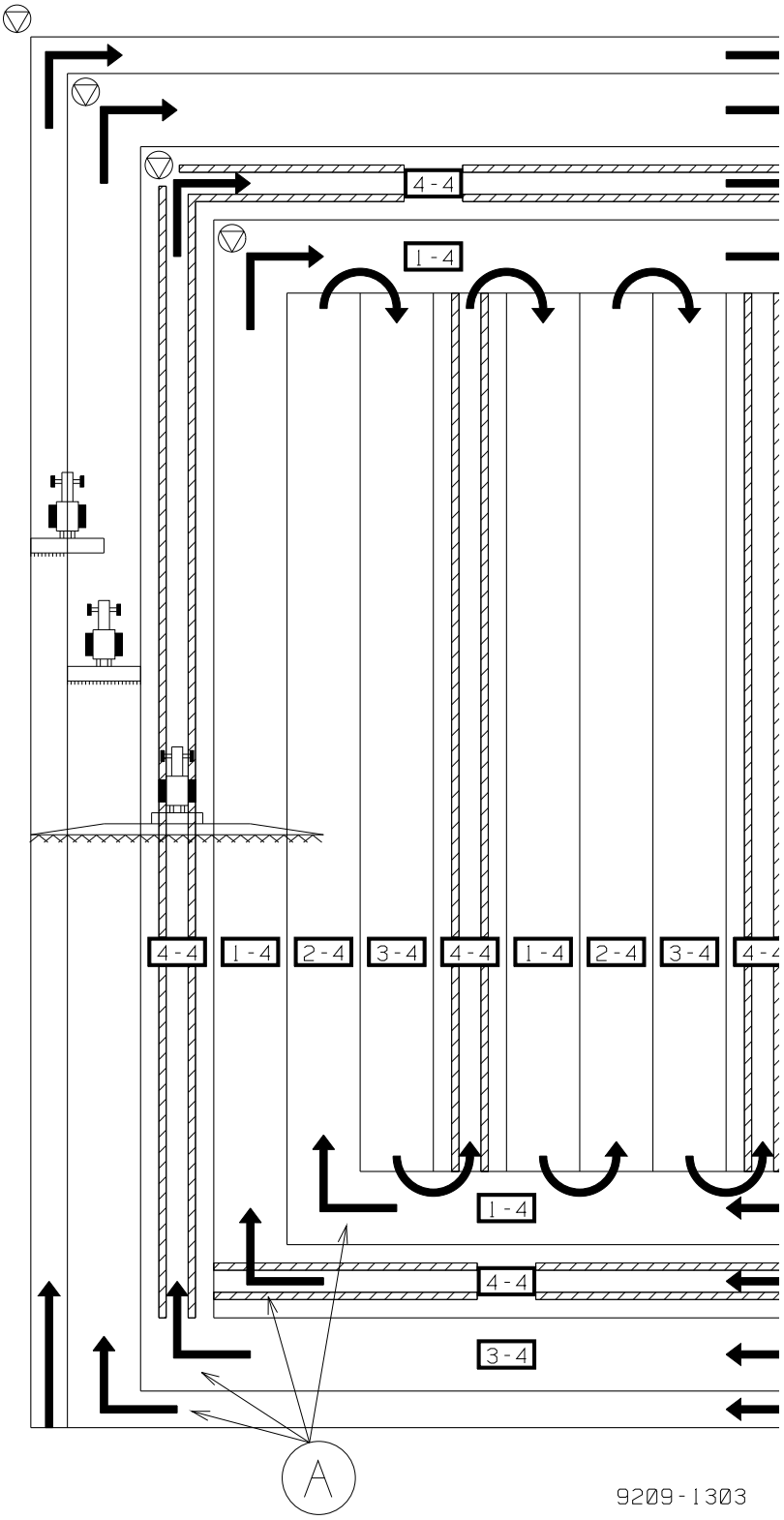
The tramline cannot be split over 2 bouts in this example with a rhythm of 4 encoded. The first bout can only be sown with one half of the drill open. Once this is done the tramlines can be made with clutches fitted to the middle of the drill.

NB!

Tramlines are made when the present bout number is the same as the encoded rhythm (track number).

Note where, in the first 4 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners).

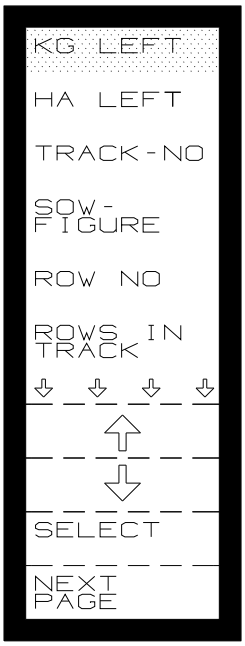
Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.

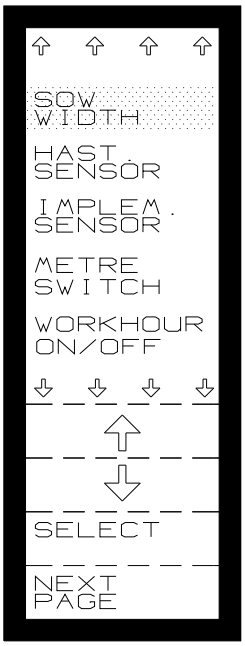


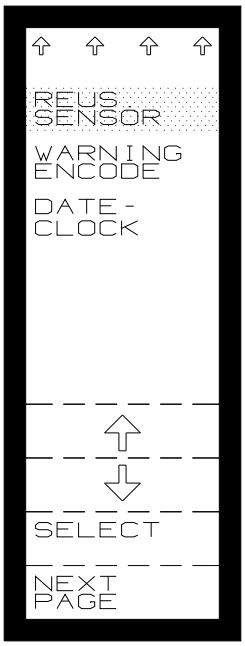
SEED DRILL ENCODEMENT

This menu allows the operator to encode the various settings that are necessary for sowing. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.







KG LEFT

To see how much seed is left in the hopper, the amount filled into the seed drill must be encoded here.

NOTE: If there is some seed left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. left.

HA LEFT

Encode the size of the field to be sown before work commences. This encodement is also used to calculate end time.

TRACK NUMBER

Encode the tramline rhythm here.

Example: The working width of the seed drill is = 3 m.

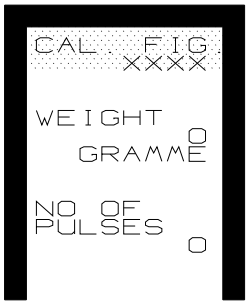
The working width of the fertiliser spreader/sprayer is = 15 m.

Track number = 15/3 = 5.

The tramlining method to be used is also selected here (**A** & **B**). The methods are described in the seed drill operation section.

SOW-FIGURE

The seed drill ***must*** be ready for calibration ***before*** pressing this key (remember to turn the drill shaft a few times to fill the feed rollers). Press the key and the following is displayed.



NB: All counters used for calibration are zero set when this screen is displayed. ***Never*** turn the drill shaft until you are ***completely*** ready to calibrate the drill. **"NO. OF PULSES" must be 0 before starting calibration.**

1. Select the **"SOW-FIGURE"** menu. If any pulses have been counted, press the **"RETURN"** key and select **"SOW-FIGURE"** again.
2. Turn the drill shaft as described in the calibration table for the seed drill.
3. When the manual calibration is finished, weigh the amount released.
4. Using the arrow down key move the cursor to **"WEIGHT"**, and encode the weight of the released amount using the numerical keypad.
5. Press the flashing **"CALC."** Key.
   The computer divides the weight released by the number of pulses counted and the calibration procedure is finished. The calculated value is displayed at the top of the screen, note this figure if the computer is to be used with other seed drills using other calibration figures. The value can be encoded directly using the numerical keypad.

ROW NO.

Encode the total number of rows that the seed drill has.

ROWS IN TRACK

Encode the number of rows that are shut when tramlines are being made. This encodement is necessary for correct KG metering. If the sown amount is not reduced when making tramlines encode 0.

SOW WIDTH

The seed drill's effective working width in Cm.

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 seed drill program (Other type) gives the option of choosing between 2 different speed sensors (Wheel tractor, Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for sowing.

RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar. Radar and the number of pulses per metre will be displayed at the top of the screen.

IMPORTANT! Working in areas with surface water can affect the accuracy of the radar, we recommend using a speed sensor fitted to the tractor under these circumstances.

Please refer to chapter 2 for forward speed calibration

IMPLEMENT SENSOR

The implement override sensor starts and stops area counting and counts bouts.

Pressing this key gives the following options:

LIFT

DRILL

The selected sensor is shown at the top of the display.

METRE SWITCH

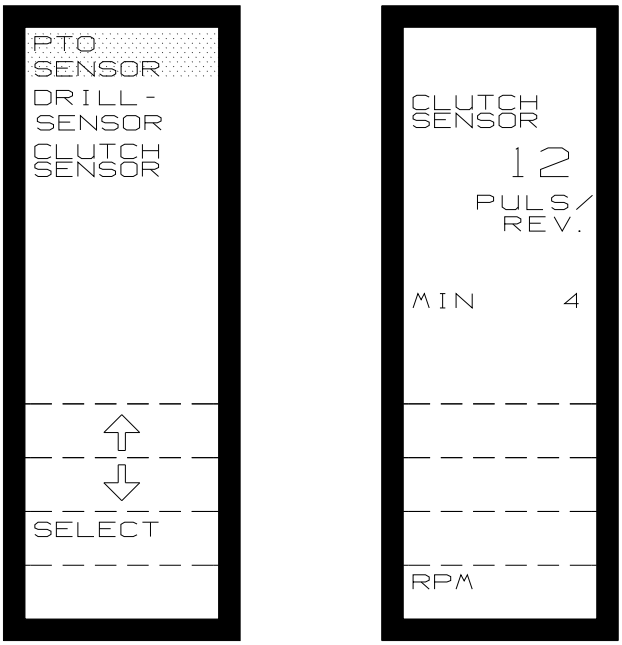
Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR

Encode the number of pulses the sensors fitted to the drill shaft give per revolution. It is also possible to select between clutch monitoring and RPM monitoring (monitoring fan speed on pneumatic machines).



PTO SENSOR

Encode 1 if the TeeJet PTO sensor kit (932-983) is used.

DRILL SENSOR

Encode 12 if the TeeJet pulse giver (905-152) or (906-152) is used. Sensors that generate fewer than 4 pulses per revolution **cannot** be used.

CLUTCH SENSOR

Encode 12 if the TeeJet pulse (905-152) or (906-152) is used. Sensors that generate fewer than 4 pulses per revolution **cannot** be used.

If you require monitoring of, e.g. a fan on a pneumatic seed drills, select RPM at the bottom of the screen.

The above example shows clutch monitoring (tramlining clutches) and the number of pulses per revolution is 12.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

KG LEFT: Warning **ON/OFF** and amount of kg (min.) at which the warning is wanted.

D. SHAFT: Warning **ON/OFF** if the drill shaft stops turning.

HOPPER: Warning **ON/OFF** for empty seed hopper.

CLUTCH: Warning **ON/OFF** for if the clutches used for tramlining stop working.

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

Seed drill, Nordsten

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- TRAMLINE INDICATION 5.17
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- HOLD KEY 5.18

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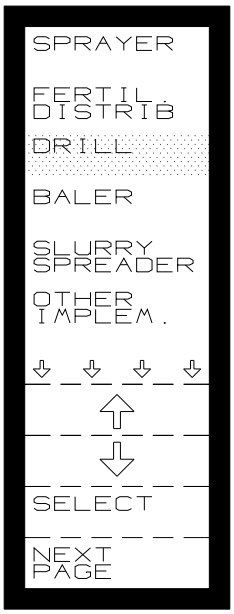
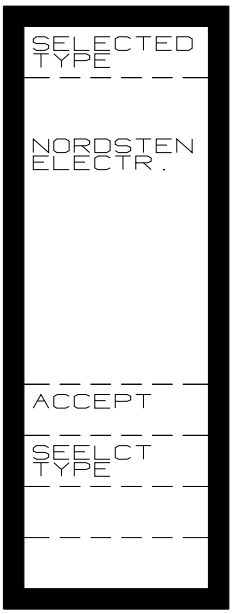
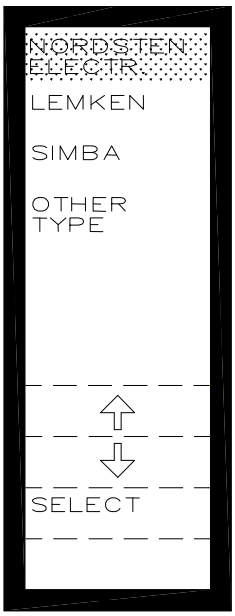
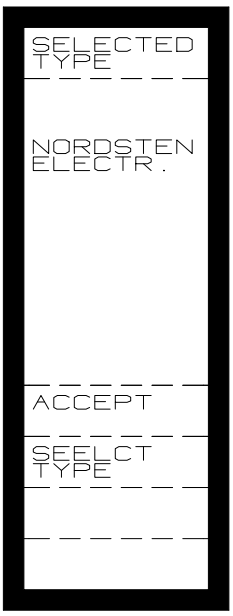
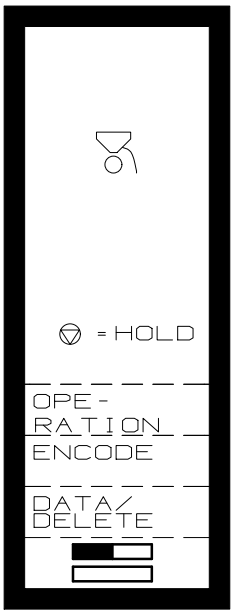
NORDSTEN ELECTRONIC SEED DRILL











1. Select drill from the main menu:
2. Move the cursor using the arrow keys to **"DRILL"** when this is done press the **"SELECT"** key.
3. Main menu: Drill.
4. **"ACCEPT"** the selected type or choose another type.
5. Select type.
6. It is now possible to choose between the displayed types.
7. Select the drill type.
8. ACCEPT

NOTE: NORDSTEN ELECTR. Is only for NORDSTEN drill with electronic gearboxes.

It is now possible to select between the following functions:

OPERATION

ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FIXED FUNCTIONS

TRAMLINE CONTROL

The primary function for seed drills is the track number. The following picture is displayed:

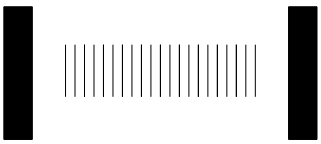
Bout number Track number

The bout number is the present bout being driven in the field (counts 1 each time the drill is lifted). The track number is what has been encoded (see **"ENCODE"**).

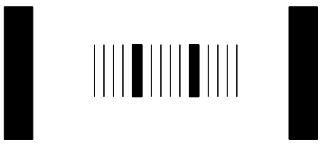
The TeeJet 5000 has 2 different methods of controlling the tramlines (**A** and **B**). The method is selected under **"ENCODE"**.

TRAMLINE INDICATION

The second fixed function indicates on the display whether tramlines are being made or not:



Tramlines are not being made.



Tramlines are being made.

KG/HA

The third function is the seed rate. The seed rate is displayed in KG/HA.Seed rate

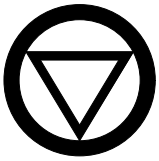
Two arrows are displayed to the left of the display. These arrows indicate whether the computer is adjusting the seed rate up or down.

Correct operation presupposes:

Correct calibration.

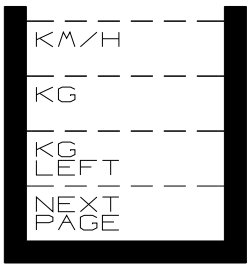
That the correct wheel circumference and working width has been encoded.

HOLD KEY



Press if the present bout is not required in the selected rhythm. This function “holds” the present status regardless of how many times the drill is raised. When this function is activated, **“HOLD”** flashes on the display.

SELECTABLE SEED DRILL FUNCTIONS



The displayed function next to the function keys at the bottom of the unit, display which functions are available.

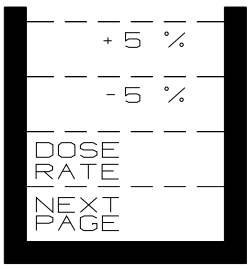
KM/H: Forward speed in kilometres per hour with 1 decimal. Forward speed is measured from the sensor selected under **“ENCODE”**.

KG: The amount sown in KG, measured by a sensor fitted on the drill shaft. Calibrating the system is necessary to ensure correct operation and this is done under **“ENCODE”**.

KG LEFT: The amount in KG of seed left in the hopper (the amount filled in must be encoded before work commences).

Pressing the **“NEXT PAGE”** key displays the next available functions:

STEP FUNCTION



+XX%: Percentile increase of the encoded seed rate. The size of the steps is altered in ENCODE.

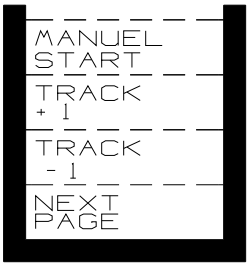
-XX%: Percentile reduction of the encoded seed rate. The size of the steps is altered in ENCODE.

NORMAL: Only displayed if the step feature has been used
Normal seed rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the seed rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next available functions:

MANUAL START/STOP



This function is used to start or stop the drill shaft motor manually.
"MANUAL START" can only be used if the machine is at a standstill. The display will change to **"MANUAL STOP"** as soon as the computer receives a signal from a forward speed sensor.

Manual start can be used in difficult conditions, i.e. corners, etc. and ensures total coverage of the field. Pressing the key turns the drill shaft for a number of seconds (each key press turns the drill shaft for the number of seconds encoded under **"ENCODE"** max. 20 seconds).

Pressing the **"MANUAL STOP"** key stops the drill shaft from rotating instantly. This function can be used on pneumatic seed drills where the seed route is so long that the tubes are not empty before the drill is raised.

The seed drill must be raised each time **"MANUAL STOP"** has been used.

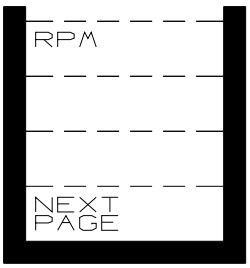
MANUAL TRACK ADJUSTMENT

TRACK+1: Moves one step forward in the tramline rhythm.

TRACK-1: Moves one step backwards in the tramline rhythm.

Pressing the **"NEXT PAGE"** key displays the next available functions:

RPM



NB: RPM is only displayed if it is selected under **"ENCODE"** (pneumatic machines).

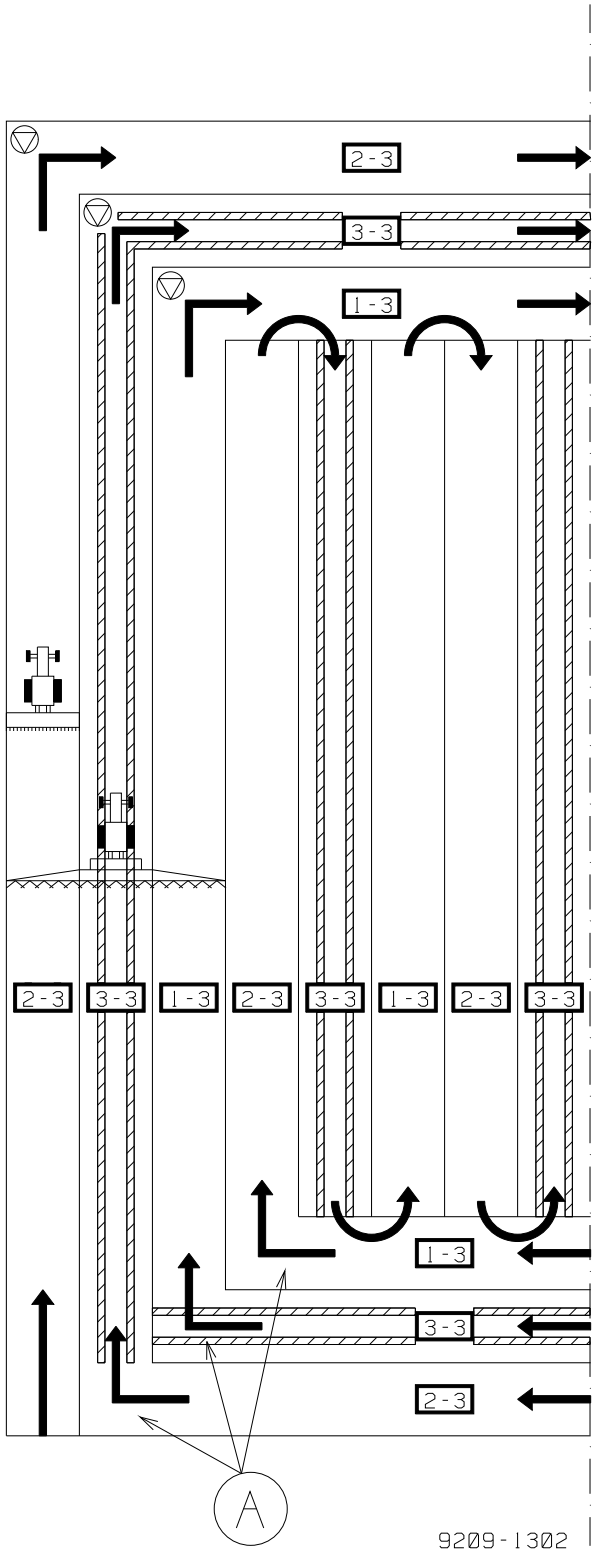
Displays RPM for the fan on pneumatic machines (if a sensor is fitted).

Pressing the **"RETURN"** key displays the menu for the selectable functions.

SELECTING THE TRACK RHYTHM

To meet the different needs of different markets, the TeeJet 5000 has 2 methods of controlling the how the tramlines are made. The method to be used is selected under encode.

METHOD B



This method is the most traditional and the most used method. Tramlines are made when the bout number is the same as the track number.

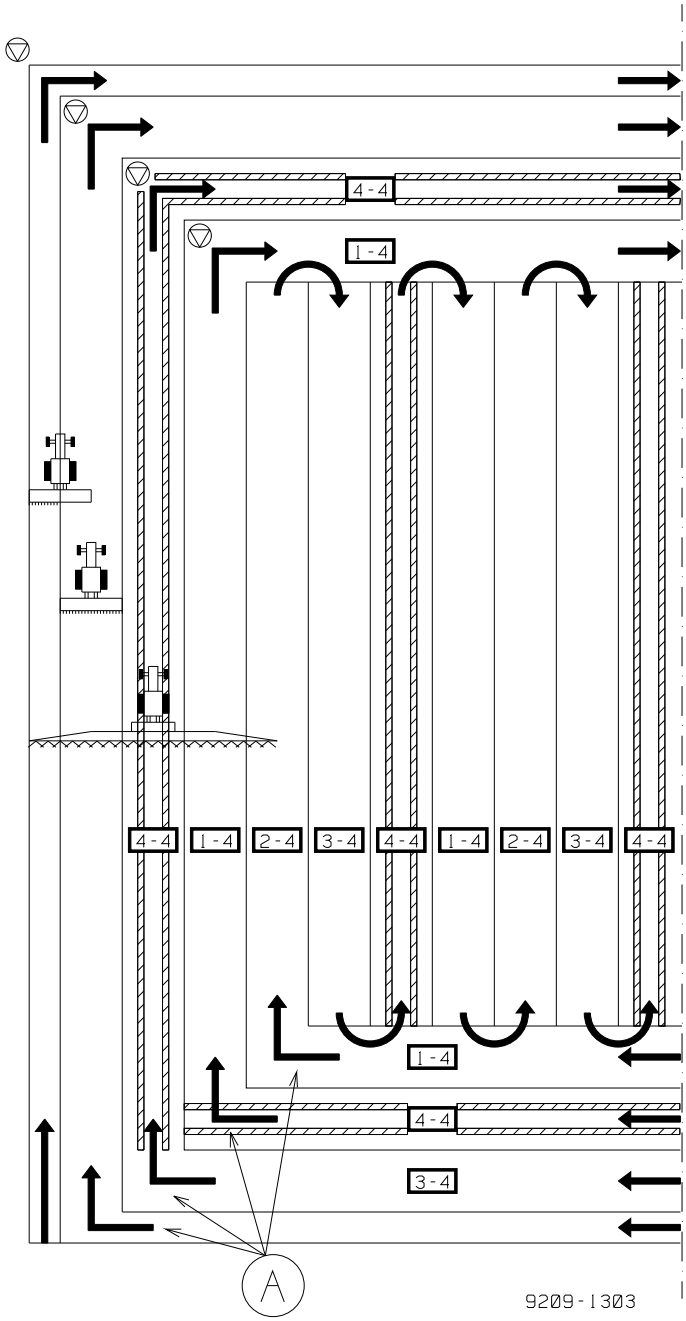
Example of method B Uneven:

The encoded rhythm in the shown example is 3. 2x2 solenoid shutters are fitted on pneumatic drills or 2 clutches are fitted on the middle of traditional machines.

Tramlines are made when the bout number is the same as the encoded rhythm (track number).

Note where the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners) in the first 3 bouts around the whole field.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



Example of method B Even:

The tramline cannot be split over 2 bouts in this example with a rhythm of 4 encoded. The first bout can only be sown with one half of the drill open. Once this is done the tramlines can be made with either 2x2 solenoid shutters or 2 clutches fitted to the middle of the drill.

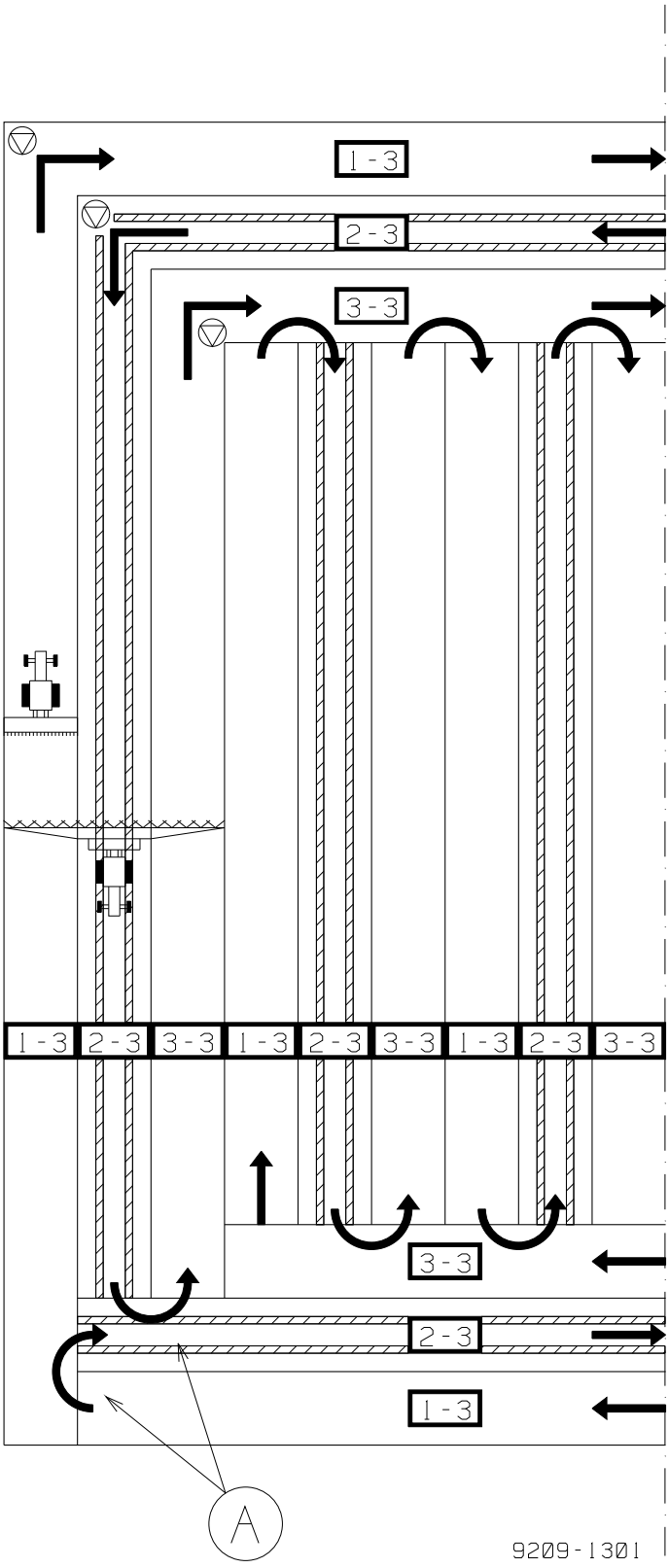
NB!

Tramlines are made when the present bout number is the same as the encoded rhythm (track number).

Note where, in the first 4 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners).

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.

METHOD A



The difference between method A and B **uneven** rhythm is minimal. The only difference is when tramlines are made. Method A makes tramlines in the middle of the rhythm, see the following example.

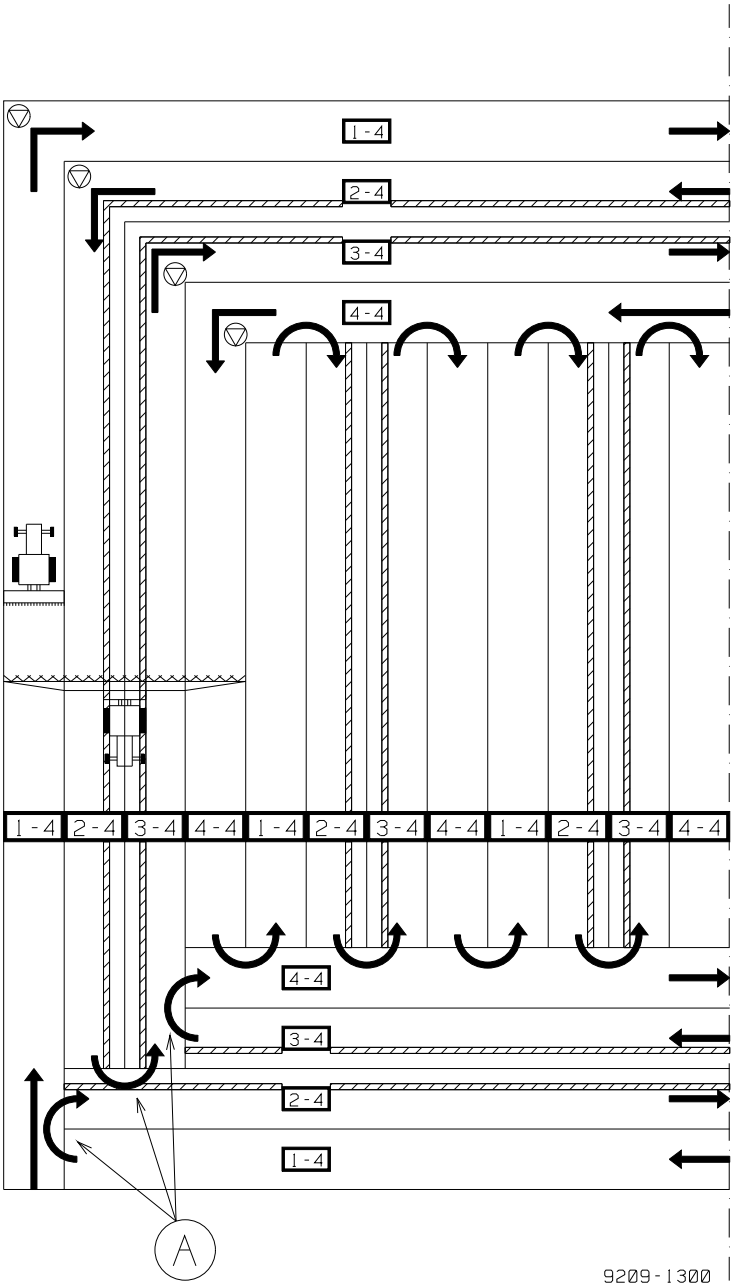
Example of Method A Uneven:

In this example the encoded rhythm is 3. Two clutches or 2x2 solenoid shutters are fitted in the middle of the drill.

Tramlines are made in bout number 2 when a rhythm (track number) of 3 is encoded.

Note where, in the first 3 bouts around the field, the present bout **should** (A) be counted and the bout **should not** be counted. After each trip around the field the machine drives in the opposite direction.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



Example of Method A Even:

A rhythm of 4 is encoded in this example. A single clutch or 1x2 solenoid shutters is fitted on the left-hand side of the seed drill.

Tramlines are made in bout numbers 2 and 3 (split), when a rhythm of 4 is encoded.

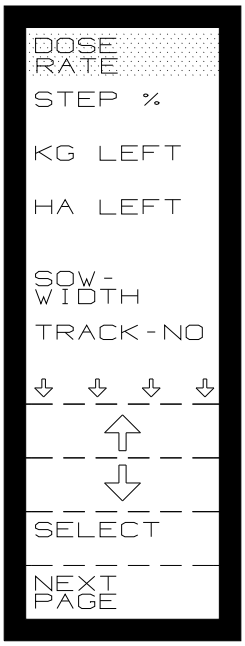
Note where, in the first 4 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners). After each trip around the field the machine is turned around, and is driven in the opposite direction.

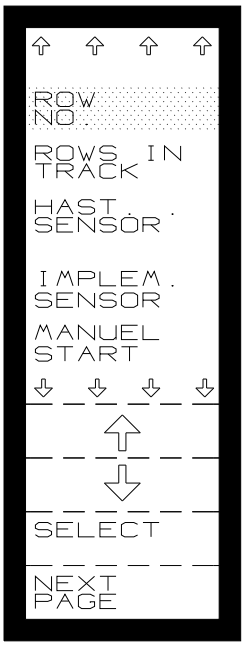
Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.

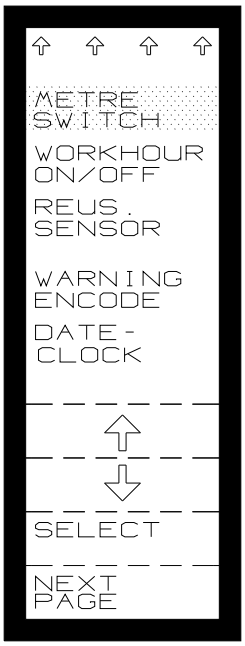
SEED DRILL ENCODEMENT

This menu allows the operator to encode the various settings that are necessary for sowing. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

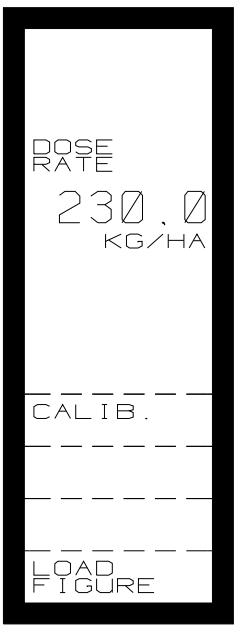
Always check these encodements in the status screen each time you change implements.







DOSE RATE



The required seed rate in kilo per hectare with 1 decimal is encoded here.

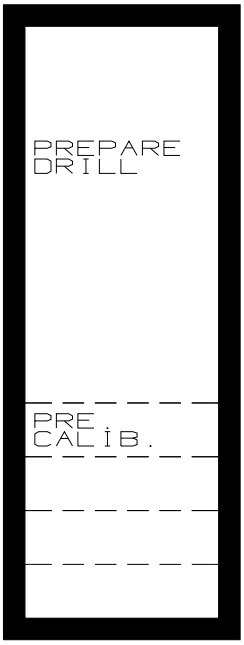
Before the system can be calibrated it is necessary to encode the total working width of the seed drill.

If the encoded sow width is 0, the program will automatically change to sow width encodement, (remember that the effective sow width is encoded in centimetres), pressing return changes the screen back to the calibration screen.

LOAD FIGURE:

Pressing this key changes to a different screen where it is possible to encode **"GRAMS/PULSE"** should this be deleted by mistake.

CALIBRATION



Calibration is essential for correct operation of the system. The accuracy of all seed rates depends on this calibration.

Pressing the **"CALIB."** Key displays the screen to the left.

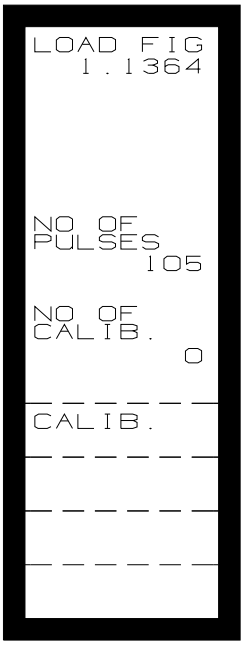
WARNING: The drill shaft rotates when "CALIB." Is pressed.

Before pressing **"CALIB."** Ensure that the seed drill is full and that the equipment used for calibration is fitted.

The drill shaft will rotate for 10 seconds when **"CALIB."** Has been pressed to ensure that the feed rollers are full of seed.

(Remember to empty the calibration tray/bucket again before proceeding).

This screen is now displayed:



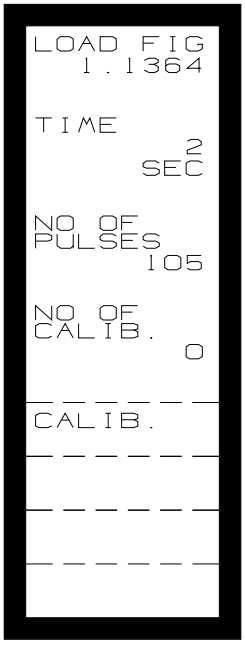
LOAD FIG: The previous load figure.

NO. OF PULSES: The pulses are counted during calibration.

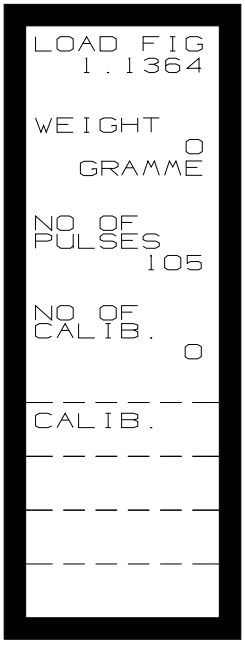
NO. OF CALIB: Shows the number of calibrations.

The drill shaft will rotate for 10 seconds when the **"CALIB."** Key is pressed.

The number of calibrations can be increased for each press of the key. This gives the possibility of varying the amount and therefore the weight of the released seed, so weighing in relation to the type of scales being used is as good as possible.



The screen changes once the drill shaft has rotated for the number of seconds encoded:



The weight of the released grain is encoded in grams under **"WEIGHT"**.

"CALC." flashes

Pressing **"CALC."** Will calculate a new load figure, which is displayed at the top of the screen.

The calibration procedure is now finished; pressing the return key brings the **"ENCODE"** menu back.

STEP%

The size of the steps, this percentile value is the same for both + and -.

KG LEFT

To see how much seed is left in the hopper, the amount filled into the seed drill must be encoded here.

NOTE: If there is some seed left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. left.

HA LEFT

Encode the size of the field to be sown before work commences. This encodement is also used to calculate end time.

SOW WIDTH

The total working width of the seed drill is encoded here in centimetres.

TRACK NUMBER

Encode the tramline rhythm here.

Example: The working width of the seed drill is = 3 m.

The working width of the fertiliser spreader/sprayer is = 15 m.

Track number = 15/3 = 5.

The tramlining method to be used is also selected here (**A** & **B**). The methods are described in the seed drill operation section.

ROW NO.

Encode the total number of rows that the seed drill has.

ROWS IN TRACK

Encode the number of rows that are shut when tramlines are being made. This encodement is necessary for correct KG metering.

If the sown amount is not reduced when making tramlines encode 0.

NB: Pneumatic seed drills do not reduce the amount when tramlines are being made.

FORWARD SPEED SENSOR

There is a speed sensor fitted to the seed drill that gives a suitable number of pulses for the TeeJet 5000. With the future in mind the computer is also able to receive signals from a sensor fitted onto a tractor or a radar sensor.

Please refer to chapter 2 for forward speed calibration.

IMPLEMENT SENSOR

The implement override sensor is used to stop and start area measurement and count the bouts driven. It is possible to choose between LIFT and DRILL.

The override signal will normally come from a sensor fitted on the seed drill (select DRILL).

MANUAL START

Encode the number of seconds that the drill shaft will rotate for when **"MANUAL START"** is pressed, max. 20 seconds.

METRE SWITCH

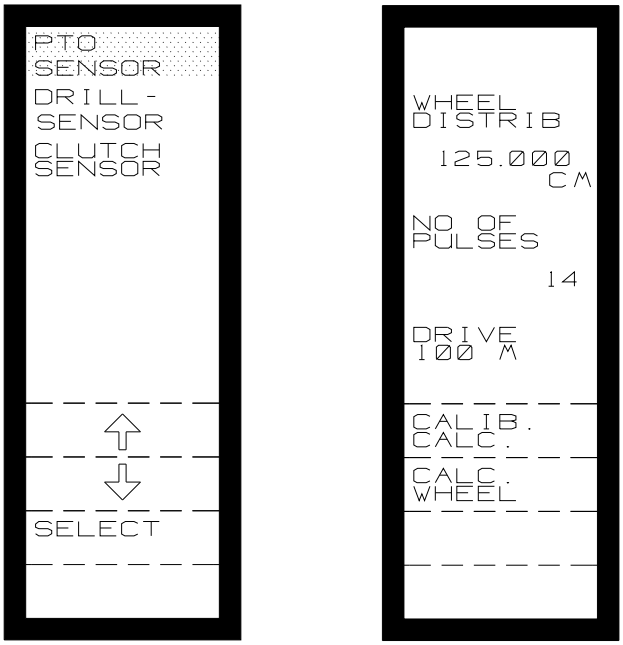
Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR

Encode the number of pulses the sensors fitted to the drill shaft give per revolution. It is also possible to select between clutch monitoring and RPM monitoring (monitoring fan speed on pneumatic machines).



PTO SENSOR

Encode 1 if the TeeJet PTO sensor kit (932-983) is used.

DRILL SENSOR

Encode the number of pulses per revolution for the drill shaft sensor, **(normally 12)**.

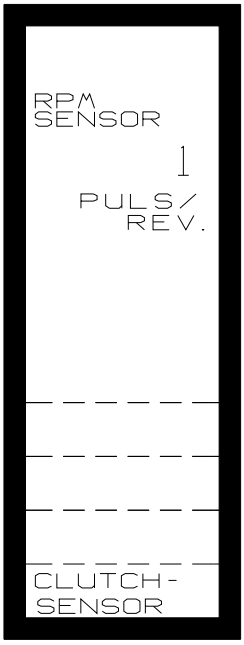
CLUTCH SENSOR

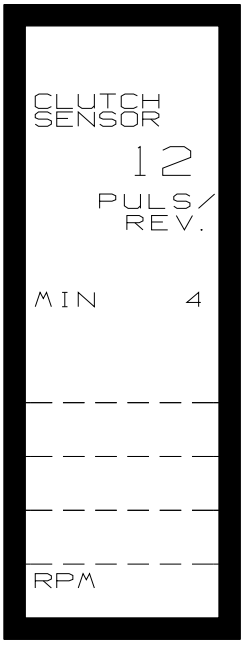
Select whether it is a traditional seed drill (clutch monitoring) or whether it is a pneumatic seed drill (fan monitoring).

Select RPM and encode 1 pulse per rev. if a pneumatic seed drill is being used.

For traditional seed drills fitted with tramline clutches, select **"CLUTCH SENSOR"** the number of pulses per rev. is normally **12**.

example:





WARNINGS

The following warnings are fixed warnings; they **cannot** be switched off.

WARN DOSE AREA

Check to see if the drill shaft motor has stopped when this warning is given.

Reasons:

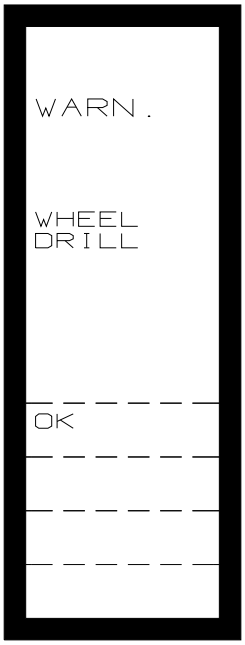
Foreign bodies are stopping the drill shaft.

The encoded seed rate is outside of the regulating area.

The battery power is too low.

To avoid bare patches in the field it is necessary to raise the drill and back to the place at which sowing stopped.

WARN WHEEL DRILL



All other alarms require the wheel sensor to be generating pulses. To avoid large bare patches, should the wheel sensor be damaged, and therefore the computer receives no pulses, even if the drill is lowered, the warning WHEEL DRILL will be given after approx. 15 seconds. The warning is automatically removed when the computer receives pulses from the wheel sensor or when the seed drill is raised. Pressing the **"OK"** key will remove the warning for approx. 15 seconds.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted "OFF".

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

KG LEFT: Warning **ON/OFF** and amount of kg (min.) in the hopper at which the warning is wanted.

D. SHAFT: Warning **ON/OFF** if the drill shaft stops turning.

HOPPER: Warning **ON/OFF** for empty seed hopper.

RPM: Warning **ON/OFF** and **MIN/MAX**-limits for fan RPM (pneumatic seed drills)
If selected under **"CLUTCH SENSOR"**

NB: If the warning for RPM is "on" then the computer will not allow sowing to commence before it receives signals from the fitted RPM sensor.
If the warning is "off" then sowing is independent of the RPM sensor.

CLUTCH: Warning **ON/OFF** for if the clutches used for tramlining stop working.

DATE - CLOCK:

Set the date and time in this menu:

HOURS – MINUTES – YEAR – MONTH – DAY.

Seed drill, Lemken

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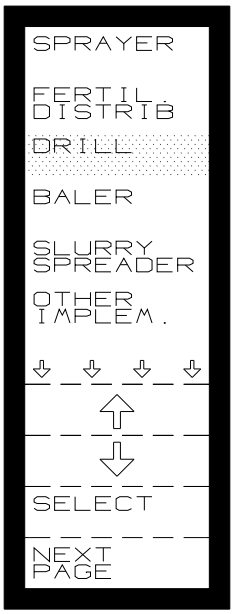
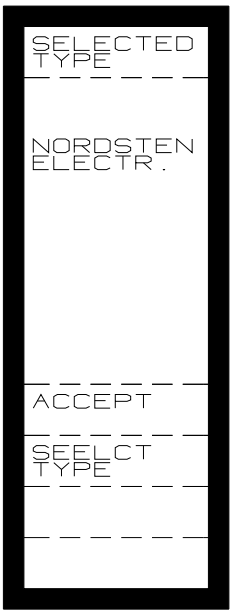
LEMKEN SEED DRILL



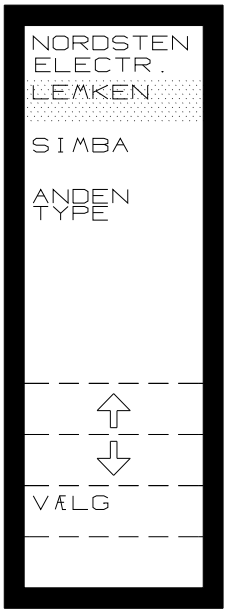


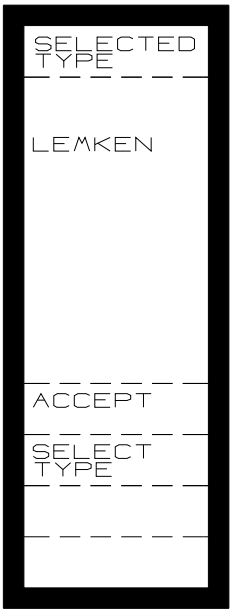
1. Select drill from the main menu:

2. Move the cursor using the arrow keys to **"DRILL"** when this is done press the **"SELECT"** key.

3. Main menu: Drill.

4. **"ACCEPT"** the selected type or choose another type.



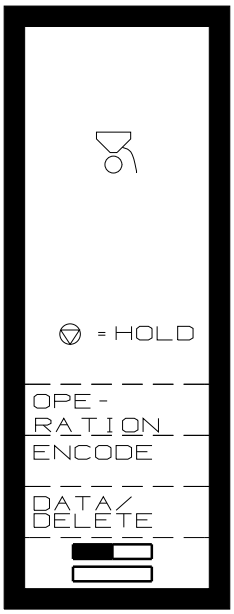


5. Select type.

6. It is now possible to choose between the displayed types.

7. Select the drill type.

8. ACCEPT



It is now possible to select between the following functions:

OPERATION

ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

FIXED FUNCTIONS

TRAMLINE CONTROL

The primary function for seed drills is the track number. The following picture is displayed:

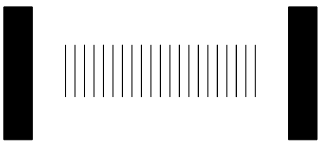
Bout number Track number

The bout number is the present bout being driven in the field (counts 1 each time the drill is lifted). The track number is what has been encoded (see **"ENCODE"**).

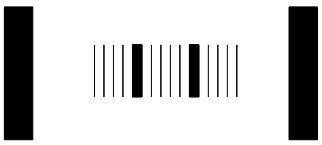
The TeeJet 5000 has 2 different methods of controlling the tramlines (**A** and **B**). The method is selected under **"ENCODE"**.

TRAMLINE INDICATION

The second fixed function indicates on the display whether tramlines are being made or not:



Tramlines are not being made.



Tramlines are being made.

KG/HA

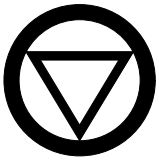
The third function is the seed rate. The seed rate is displayed in KG/HA. seed rate

Two arrows are displayed to the left of the display. These arrows indicate whether the computer is adjusting the seed rate up or down.

Correct operation presupposes:

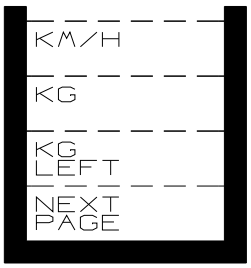
1. Correct calibration.
2. That the correct wheel circumference, and working width has been encoded.

HOLD KEY



Press if the present bout is not required in the selected rhythm. This function “holds” the present status regardless of how many times the drill is raised. When this function is activated, **“HOLD”** flashes on the display.

SELECTABLE SEED DRILL FUNCTIONS



KM/H: Forward speed in kilometres per hour.

KG: The amount sown in KG.

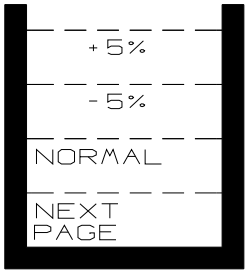
KG LEFT: The amount in KG of seed left in the hopper.

KM/H: Forward speed in kilometres per hour with 1 decimal. Forward speed is measured from the sensor selected under **“ENCODE”**.

KG: The amount sown in KG, measured by a sensor fitted on the drill shaft. Calibrating the system is necessary to ensure correct operation and this is done under **“ENCODE”**.

KG LEFT: The amount in KG of seed left in the hopper (the amount filled in must be encoded before work commences).

Pressing the **“NEXT PAGE”** key displays the next available functions:



+XX%: Step, increase.

-XX%: Step, decrease.

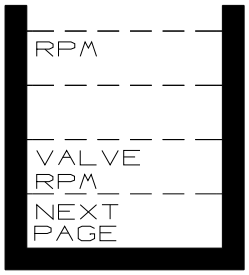
NORMAL: Returns to normal seed rate.

+XX%: Step, increase of the desired seed rate in steps. The size of the steps are encoded in “ENCODE”

-XX%: Step, decrease of the desired seed rate in steps. The size of the steps are encoded in “ENCODE”

NORMAL: Normal seed rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

Pressing the **“NEXT PAGE”** key displays the next available functions:



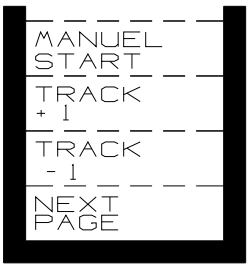
RPM: Fan Speed.

VALVE RPM: Regulating motor speed

RPM: Fan speed displayed in revolutions per minute.

VALVE RPM: Regulating motor speed displayed in revolutions per minute. Selecting this function display's, both the “desired” motor speed calculated from the actual forward speed, the actual seed rate and the actual regulating motor speed.

Pressing the **“NEXT PAGE”** key displays the next available functions:



MANUAL START: Manual start and stop of the regulating motor.

TRACK+1: Moves one step forward in the tramline rhythm.

TRACK-1: Moves one step backwards in the tramline rhythm.

MANUAL START: This function is used to start or stop the drill shaft motor manually. **“MANUAL START”** can only be used if the machine is at a standstill. The display will change to **“MANUAL STOP”** as soon as the computer receives a signal from a forward speed sensor.

Manual start can be used in difficult conditions, i.e. corners, etc. and ensures total coverage of the field. Pressing the key turns the drill shaft for a number of seconds (each key press turns the drill shaft for the number of seconds encoded under **“ENCODE”** max. 20 seconds).

Pressing the **“MANUAL STOP”** key stops the drill shaft from rotating instantly. This function can be used on pneumatic seed drills where the seed route is so long that the tubes are not empty before the drill is raised.

The seed drill must be raised each time **“MANUAL STOP”** has been used.

TRACK+1: Moves one-step forward in the tramline rhythm.

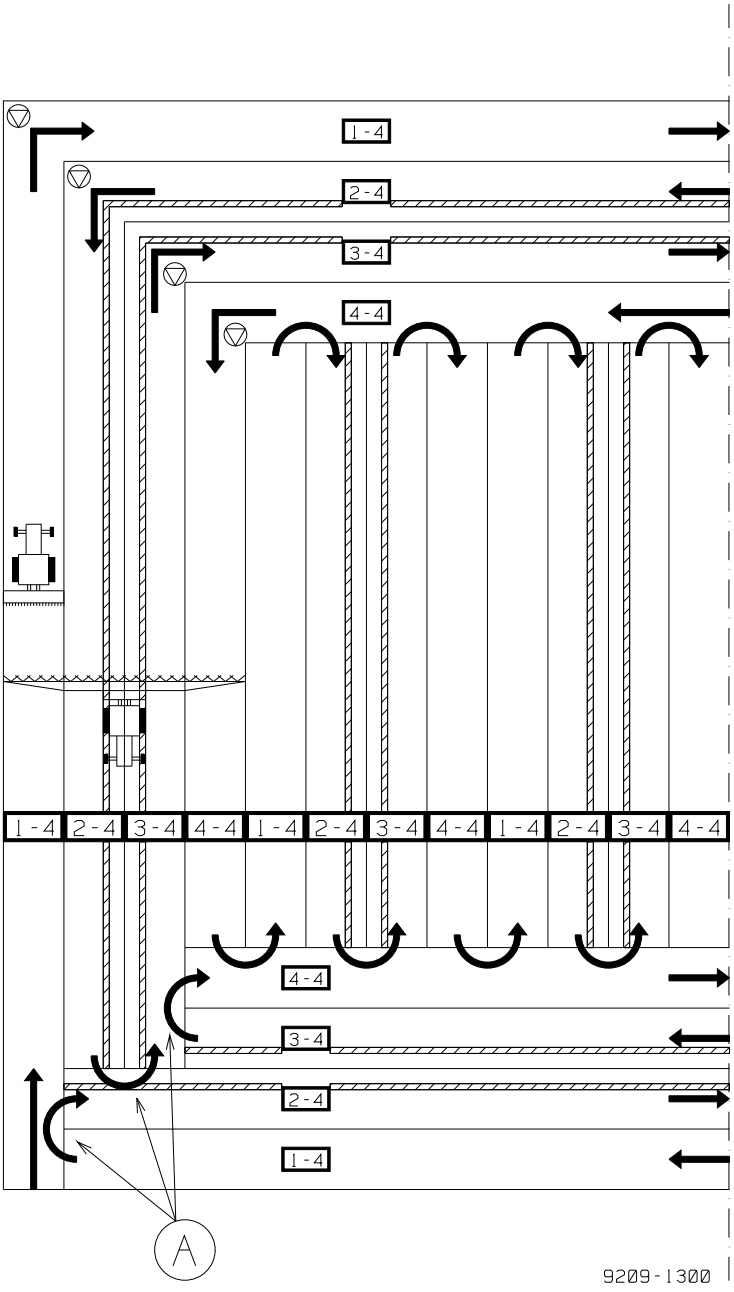
TRACK-1: Moves one step backward in the tramline rhythm.

Pressing the **“NEXT PAGE”** key displays the first available functions:

SELECTING THE TRACK RHYTHM

To meet the different needs of different markets, the Lemken program has four methods (A, B, C, and D) of controlling the how the tramlines are made. The method to be used is selected under encode.

METHOD A



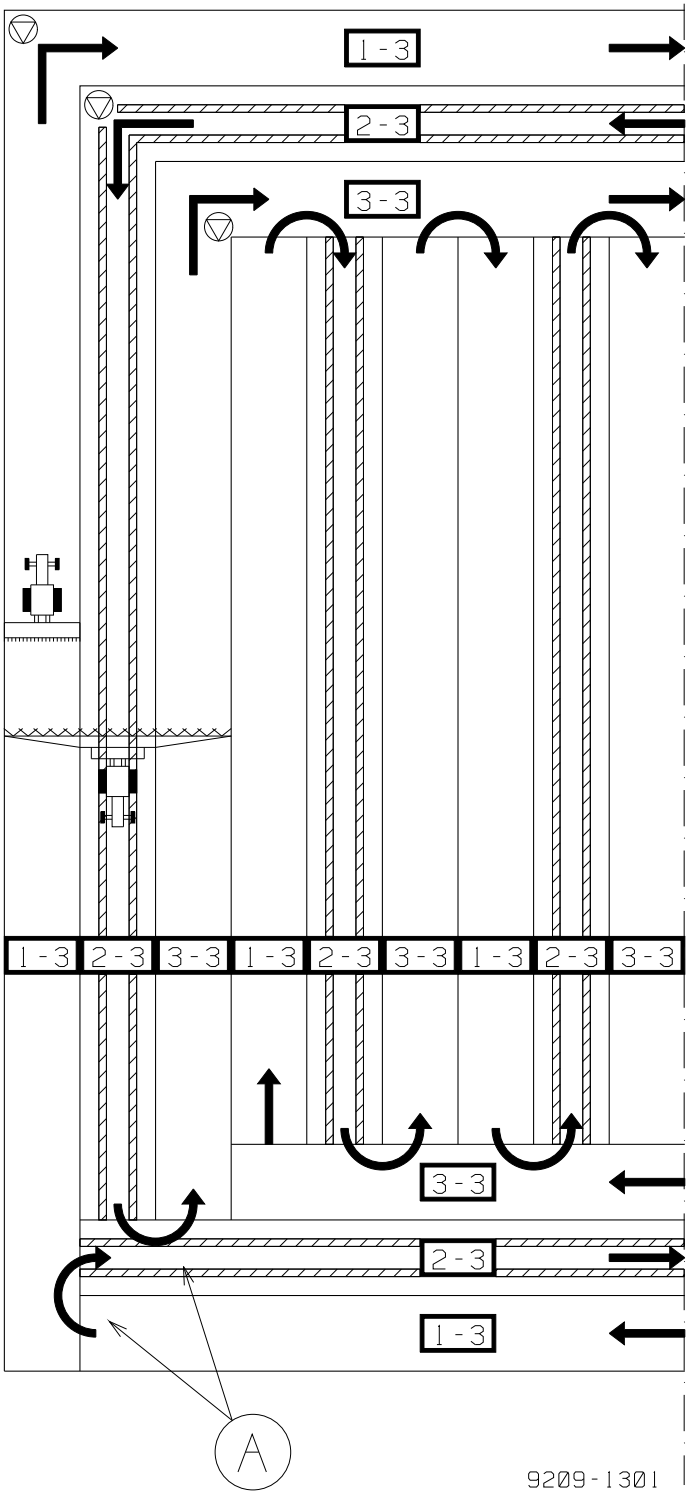
Example of Method A Even:

A rhythm of 4 is encoded in this example. A single clutch or 1x2 solenoid shutters is fitted on the left-hand side of the seed drill.

Tramlines are made in bout numbers 2 and 3 (split), when a rhythm of 4 is encoded.

Note where, in the first 4 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners). After each trip around the field the machine is turned around, and is driven in the opposite direction.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



Example of Method A Uneven:

In this example, the encoded rhythm is 3. Two clutches or 2x2 solenoid shutters are fitted in the middle of the drill.

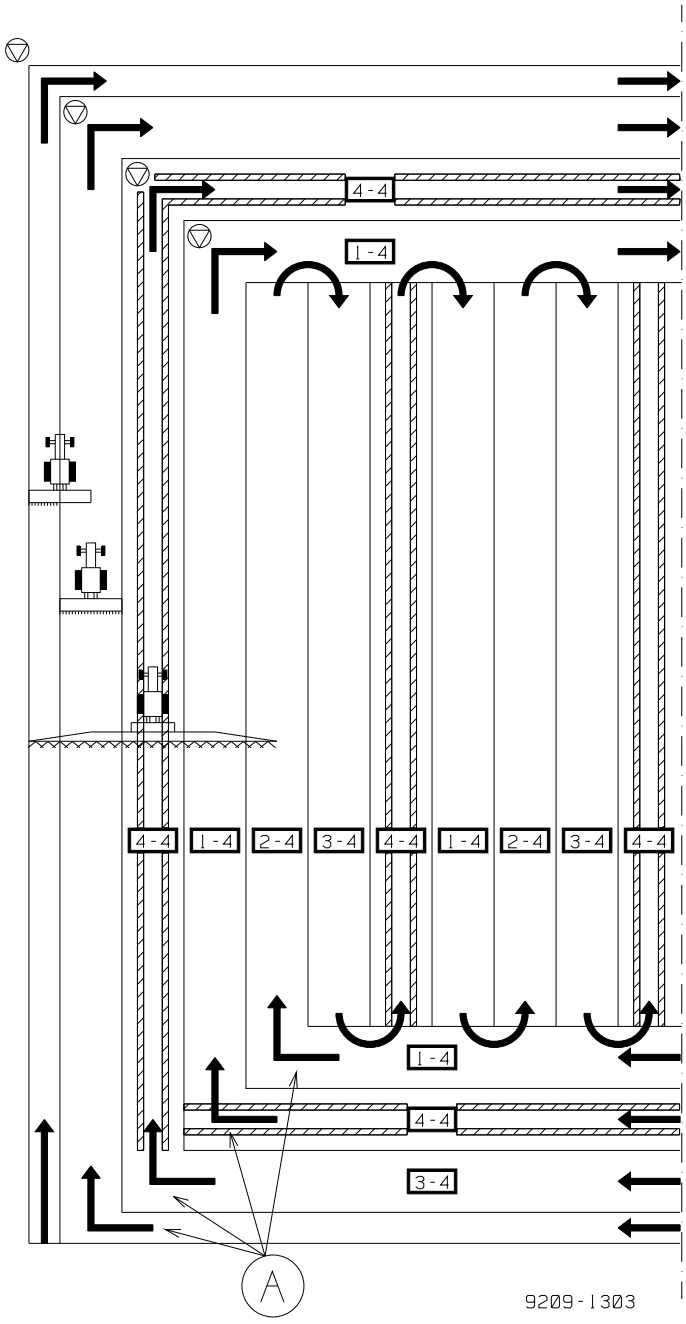
Tramlines are made in bout number 2 when a rhythm (track number) of 3 is encoded.

Note where, in the first 3 bouts around the field, the present bout **should** (A) be counted and the bout **should not** be counted. After each trip around the field, the machine drives in the opposite direction.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.

METHOD B

This method is the most traditional and the most used method. Tramlines are made when the bout number is the same as the track number.



Example of method B Even:

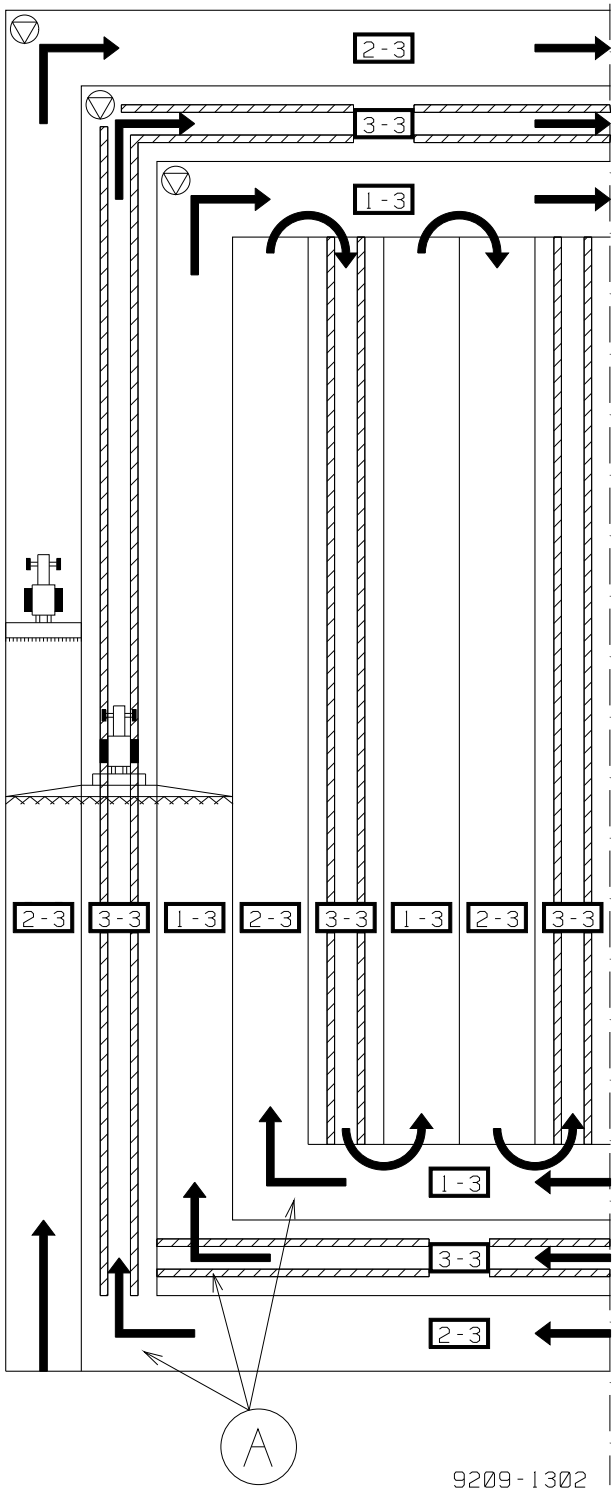
The tramline cannot be split over 2 bouts in this example with a rhythm of 4 encoded. The first bout can only be sown with one half of the drill open. Once this is done the tramlines can be made with either 2x2 solenoid shutters or 2 clutches fitted to the middle of the drill.

NB!

Tramlines are made when the present bout number is the same as the encoded rhythm (track number).

Note where, in the first 4 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners).

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



Example of method B Uneven:

The encoded rhythm in the shown example is 3. 2x2 solenoid shutters are fitted on pneumatic drills or 2 clutches are fitted on the middle of traditional machines.

Tramlines are made when the bout number is the same as the encoded rhythm (track number).

Note where the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners) in the first 3 bouts around the whole field.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.

METHOD C

This method is used with a 6-metre seed drill making 15 metre tramlines. The track number is set to 10 (see track number page 5.55).

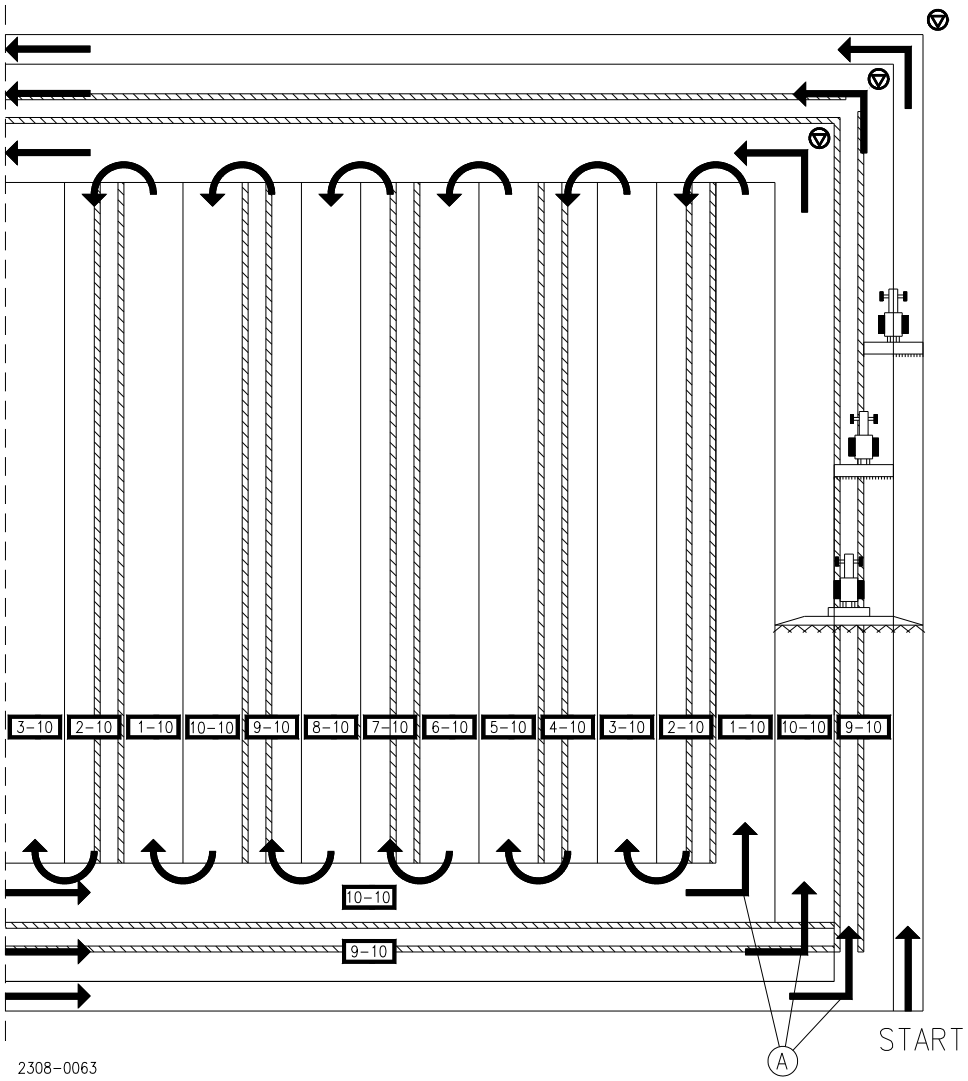
Example of method C Right:

The seed drill is fitted with 2x2 magnetic valves on the right-hand side of the machine and 2x2 magnetic valves fitted on the left-hand side of the machine.

Drilling is started on the **right**-hand side of the field as shown on the diagram. One half of the drill must be closed for the first bout. Thereafter the track number should be changed to 9-10 and tramlines are made when the actual track number is 2, 4, 7, and 9.

Note where the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners) in the first 3 bouts around the whole field.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



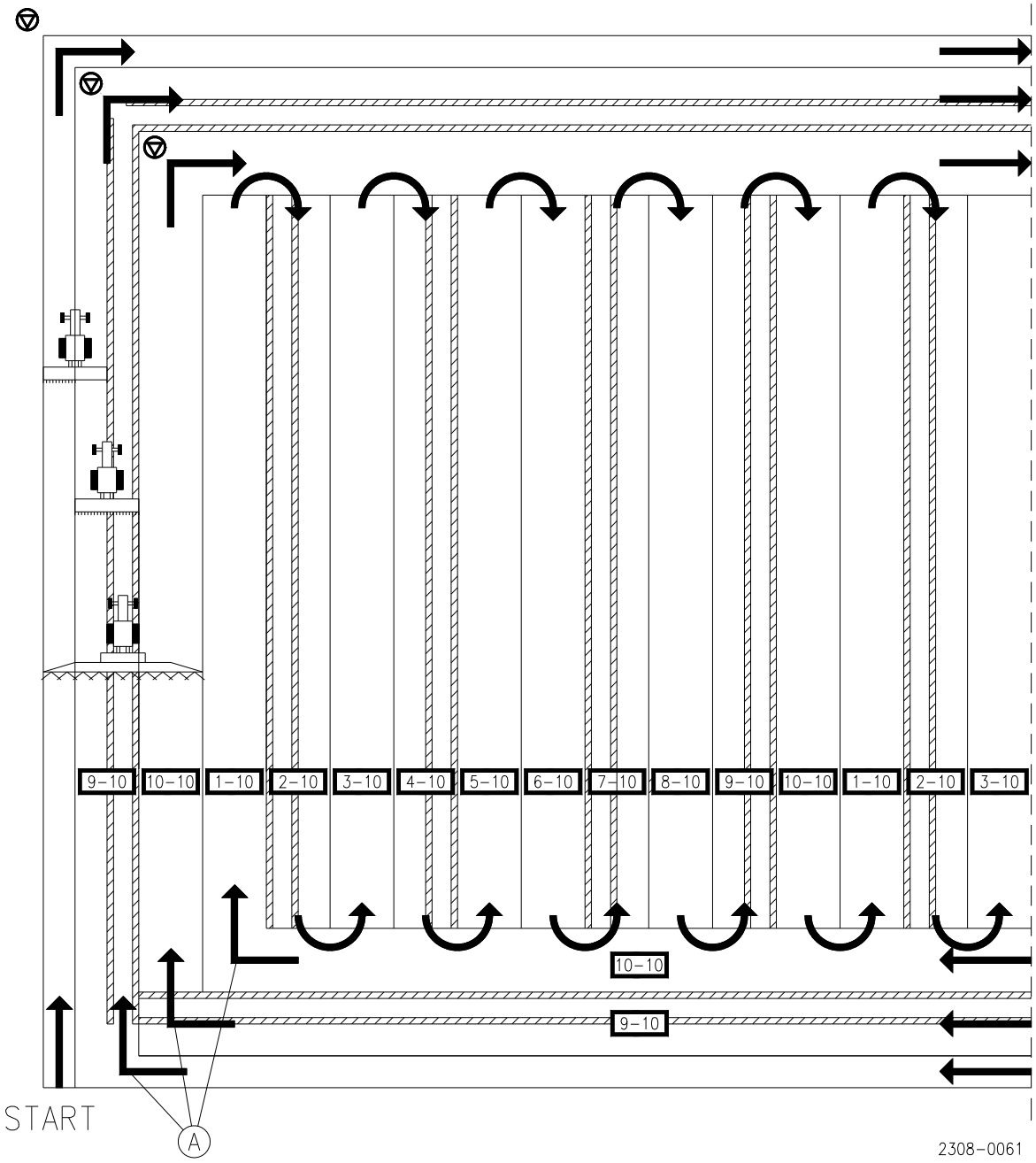
Example of method C Left:

The seed drill is fitted with 2x2 magnetic valves on the right-hand side of the machine and 2x2 magnetic valves fitted on the left-hand side of the machine.

Drilling is started on the **left**-hand side of the field as shown on the diagram. One half of the drill must be closed for the first bout. Thereafter the track number should be changed to 9-10 and tramlines are made when the actual track number is 2, 4, 7, and 9.

Note where the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners) in the first 3 bouts around the whole field.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



METHOD D

This method is used with a 4 or 6 metre seed drill making 18 or 27 metre tramlines. The track number is set to 18 (see track number page 5.55).

Example of method D Right:

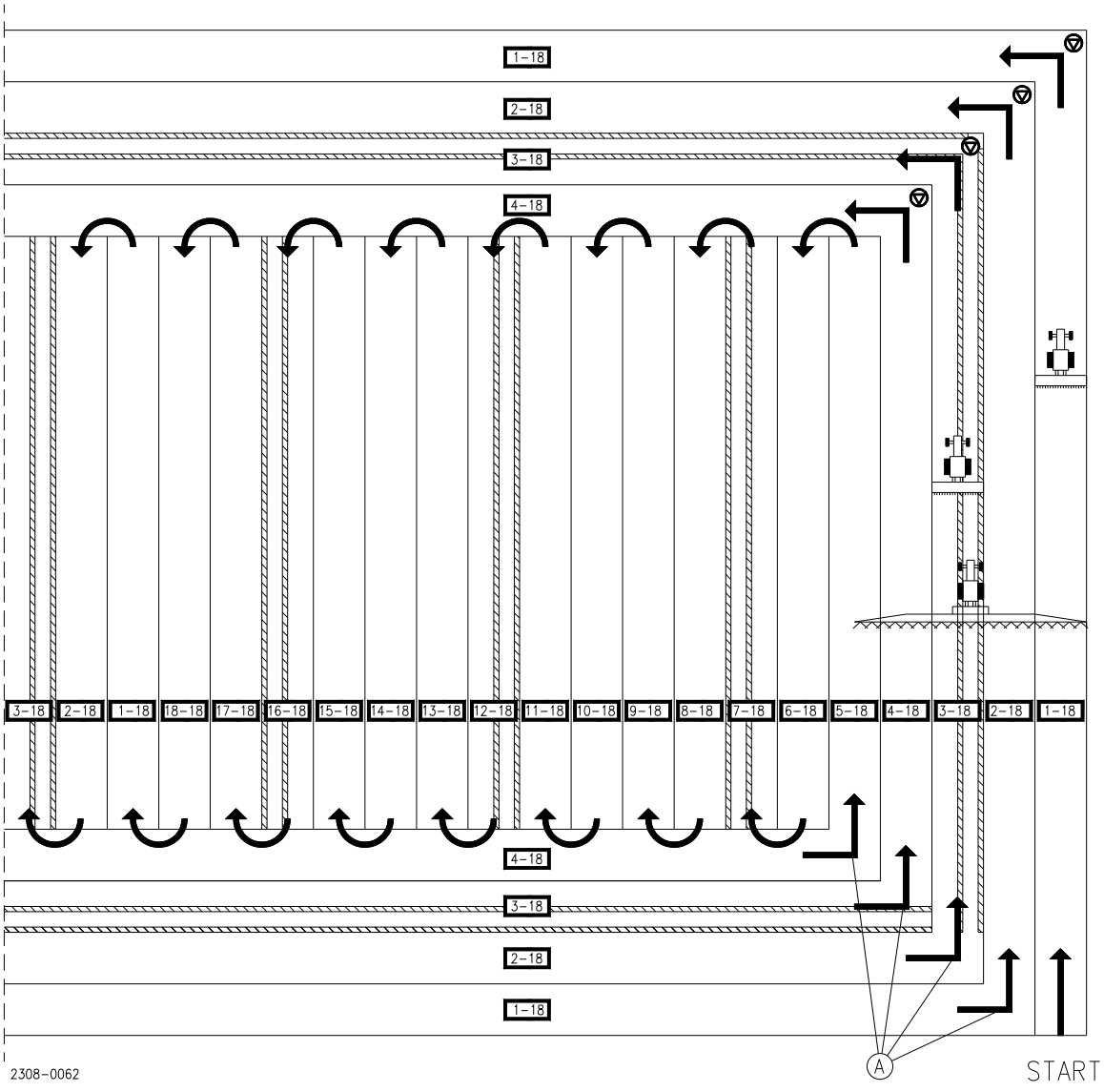
The seed drill is fitted with 2x2 magnetic valves on the right-hand side of the machine and 2x2 magnetic valves fitted on the left-hand side of the machine.

Drilling is started on the **right**-hand side of the field as shown on the diagram with a track number of 1-18.

Tramlines are made when the actual track number is 3, 7, 12, and 16.

Note where the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners) in the first 4 bouts around the whole field.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



Example of method D Left:

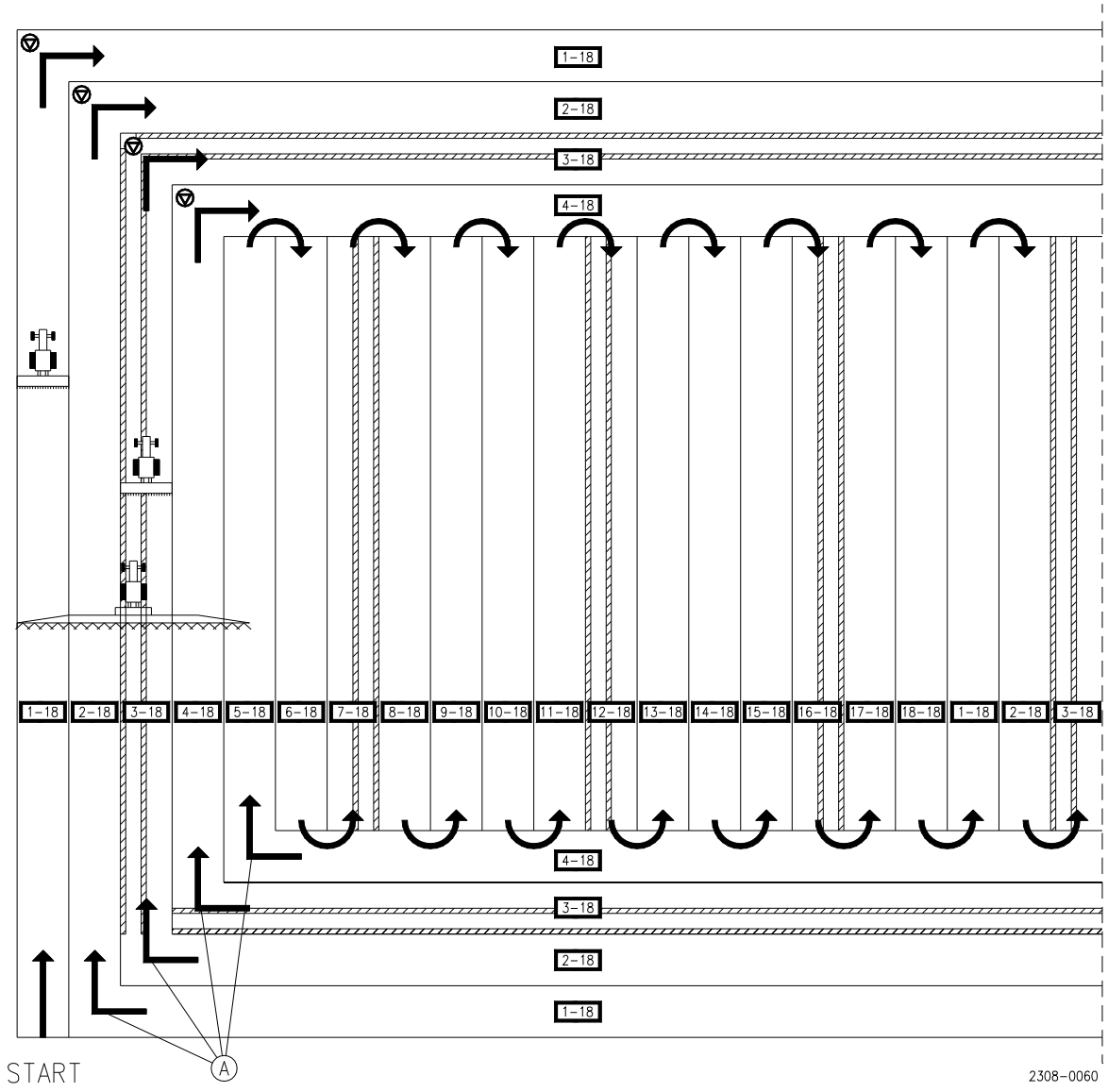
The seed drill is fitted with 2x2 magnetic valves on the right-hand side of the machine and 2x2 magnetic valves fitted on the left-hand side of the machine.

Drilling is started on the **left**-hand side of the field as shown on the diagram with a track number of 1-18.

Tramlines are made when the actual track number is 3, 7, 12, and 16.

Note where the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners) in the first 4 bouts around the whole field.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



METHOD E

This method is used when the seed drill is 6 metres wide and the implements used to cultivate the crop are 21 metres wide. A fixed rhythm of 14 is used (see TRACK NUMBER page 5.55).

Example of method E Right:

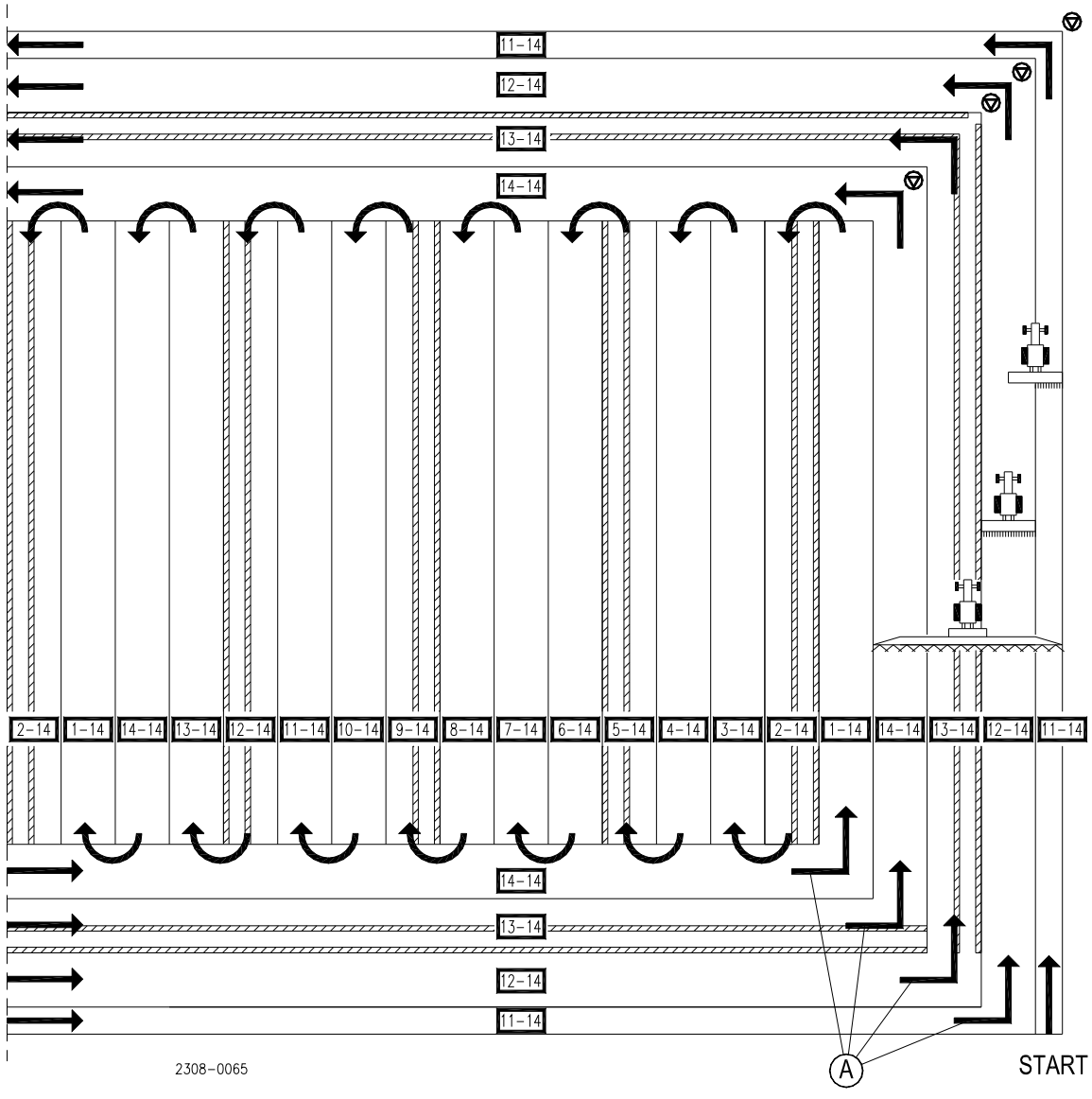
The seed drill is fitted with 2x2 magnetic valves on the right-hand side of the machine and 2x2 magnetic valves fitted on the left-hand side of the machine.

Drilling is started on the **right**-hand side of the field as shown on the diagram with a track number of 11-14.

Tramlines are made when the actual track number is; 2, 6, 9 and 13.

Note where the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners) in the first 4 bouts around the whole field.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



Example of method E Left:

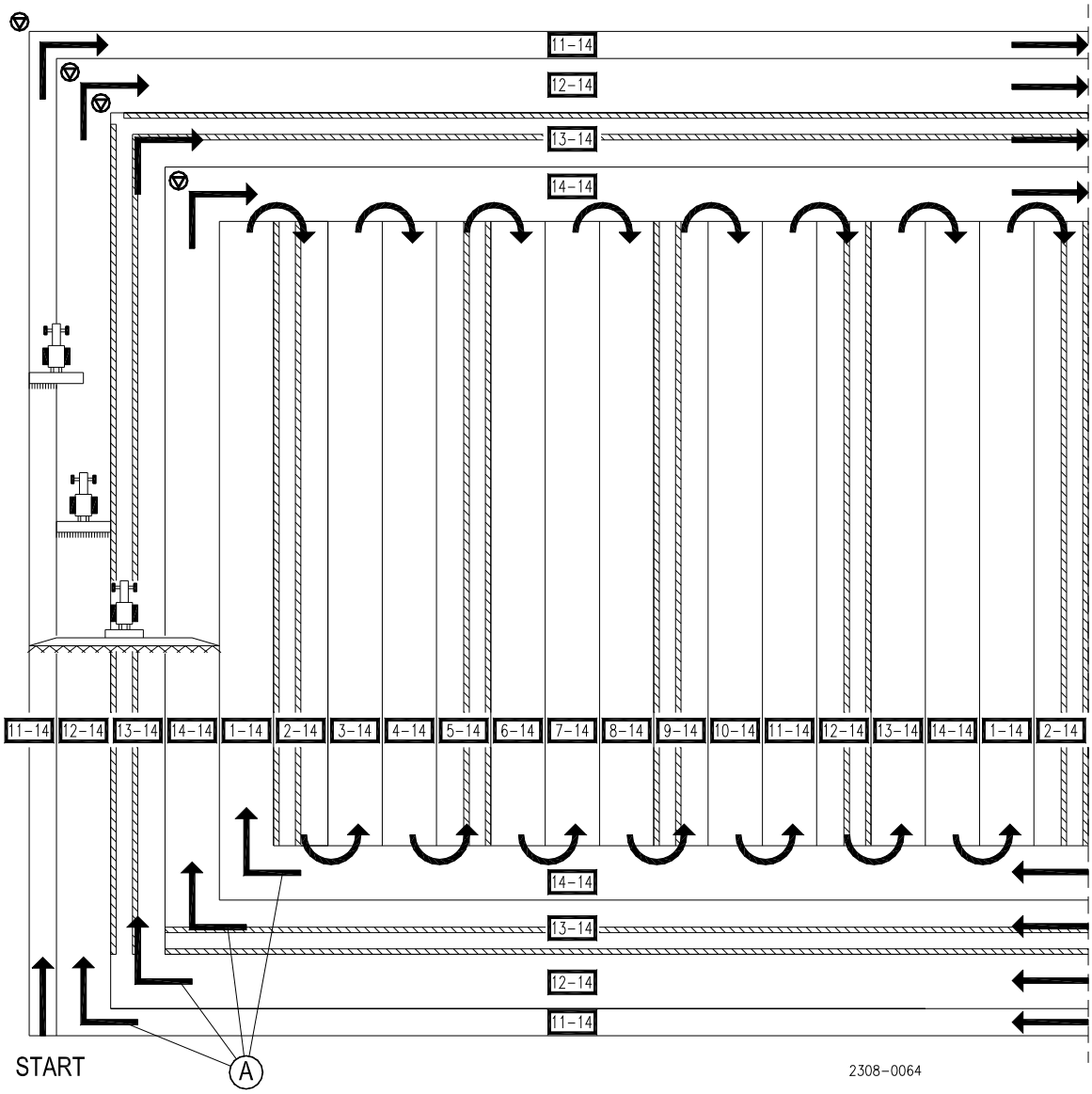
The seed drill is fitted with 2x2 magnetic valves on the right-hand side of the machine and 2x2 magnetic valves fitted on the left-hand side of the machine.

Drilling is started on the **left**-hand side of the field as shown on the diagram with a track number of 11-14.

Tramlines are made when the actual track number is; 2, 6, 9 and 13.

Note where the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners) in the first 4 bouts around the whole field.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



METHOD F

This method is used when the seed drill is 12 metres wide and the implement used to cultivate the crop is 18 metres wide.

A fixed rhythm of 6 is used (see page 5.55)

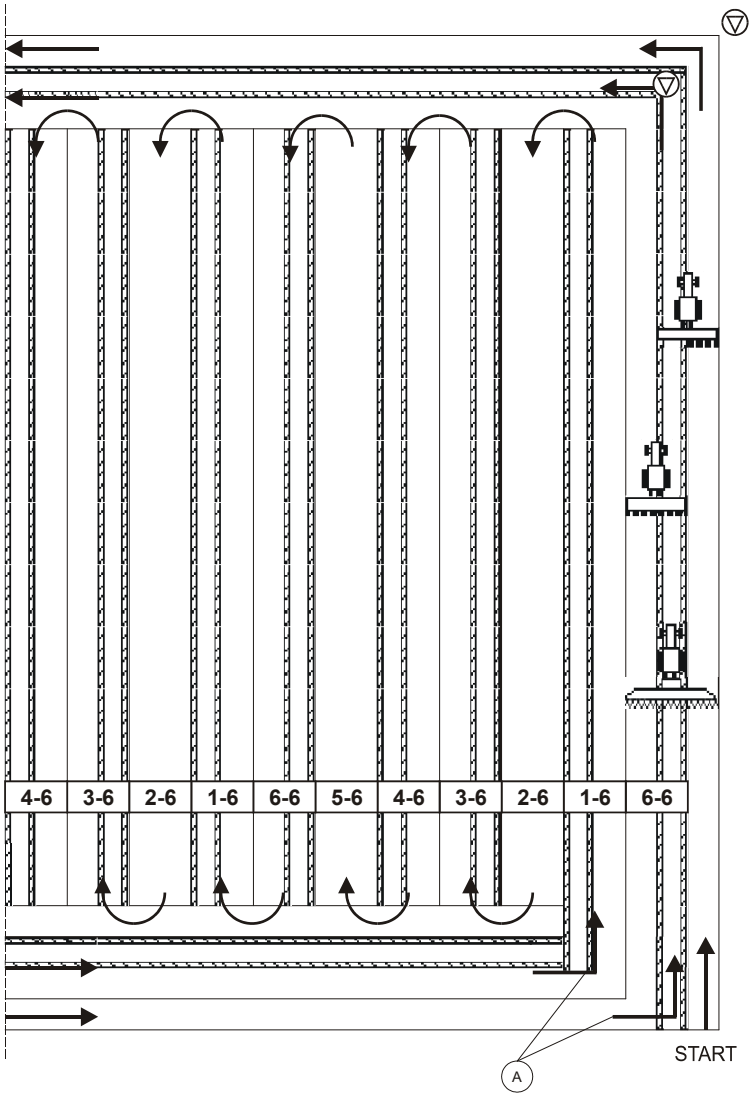
Example of method F Right:

The seed drill is fitted with 2x2 magnetic valves on the right-hand side of the drill and 2x2 magnetic valves fitted to the left-hand side of the drill.

Drilling is started on the right-hand side of the field as shown on the diagram. One half of the drill must be closed for the first bout. Thereafter the track number should be set to 6-6 and tramlines are made on the left side of the drill. Tramlines are made when the present track number is 1, 3, 4 & 6.

Note where tracks **should** be counted (A) and where tracks **should not** be counted (all other corners) in the first 3 bouts around the whole field.

Track counting can be controlled by using either the "**HOLD**" key or by using the "**TRACK +/-**" keys.



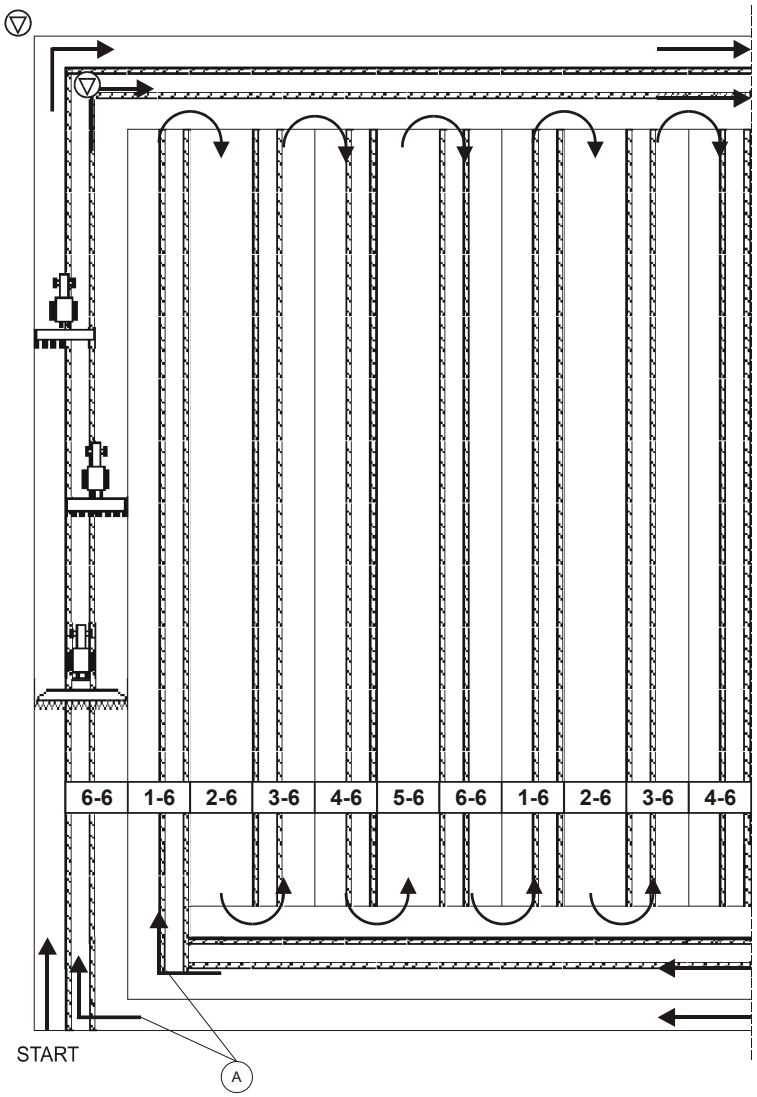
Example of method F left:

The seed drill is fitted with 2x2 magnetic valves on the right-hand side of the drill and 2x2 magnetic valves fitted to the left-hand side of the drill.

Drilling is started on the left-hand side of the field as shown on the diagram. One half of the drill must be closed for the first bout. Thereafter the track number should be set to 6-6 and tramlines are made on the right side of the drill. Tramlines are made when the present track number is 1, 3, 4 & 6.

Note where tracks **should** be counted (A) and where tracks **should not** be counted (all other corners) in the first 3 bouts around the whole field.

Track counting can be controlled by using either the "**HOLD**" key or by using the "**TRACK +/-**" keys.



METHOD G

This method is used when the seed drill is 6 metres wide and the implement used to cultivate the crop is 20 metres wide.

A fixed rhythm of 10 is used (see page 5.55)

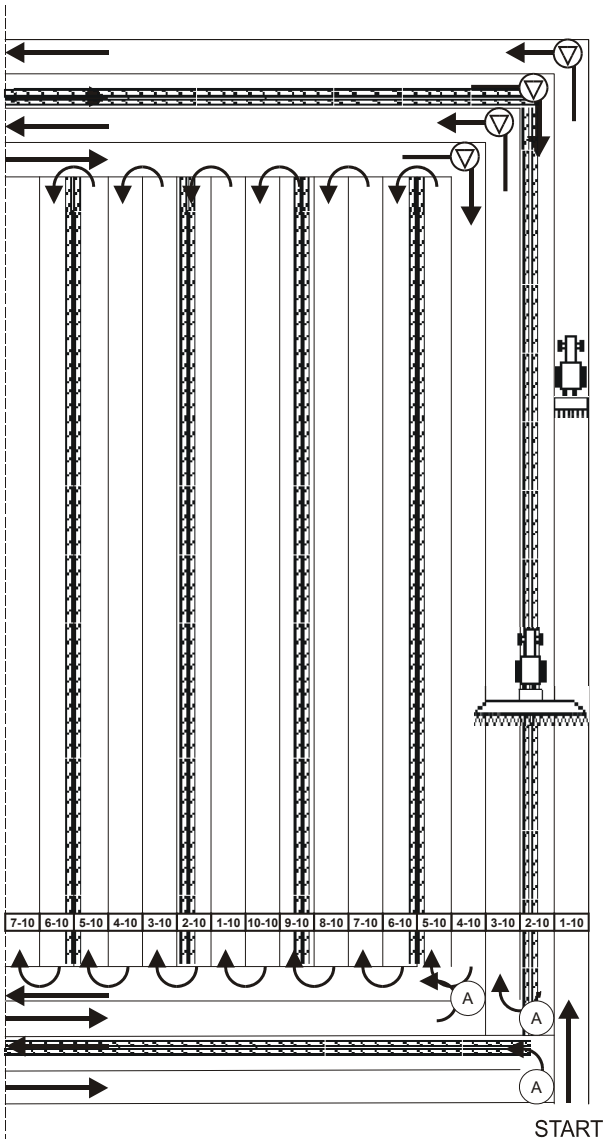
Example of method G Right:

The seed drill is fitted with 2x2 magnetic valves on the right-hand side of the seed drill and 1 magnetic valve on the left-hand side of the seed drill.

Drilling is started on the **right**-hand side of the field with the track number set to 1-10 as shown on the diagram. After the first bout around the field change direction to drive the other way around the filed, do this for the third and fourth bout also. Tramlines are made when the present track number is 2, 5, 6 and 9. Only one magnetic valve is activated on tracks 5 & 6.

Note where tracks **should** be counted (A) and where tracks **should not** be counted (all other corners) in the first 4 bouts around the field.

Track counting can be controlled by using either the "**HOLD**" key or by using the "**TRACK +/-**" keys.



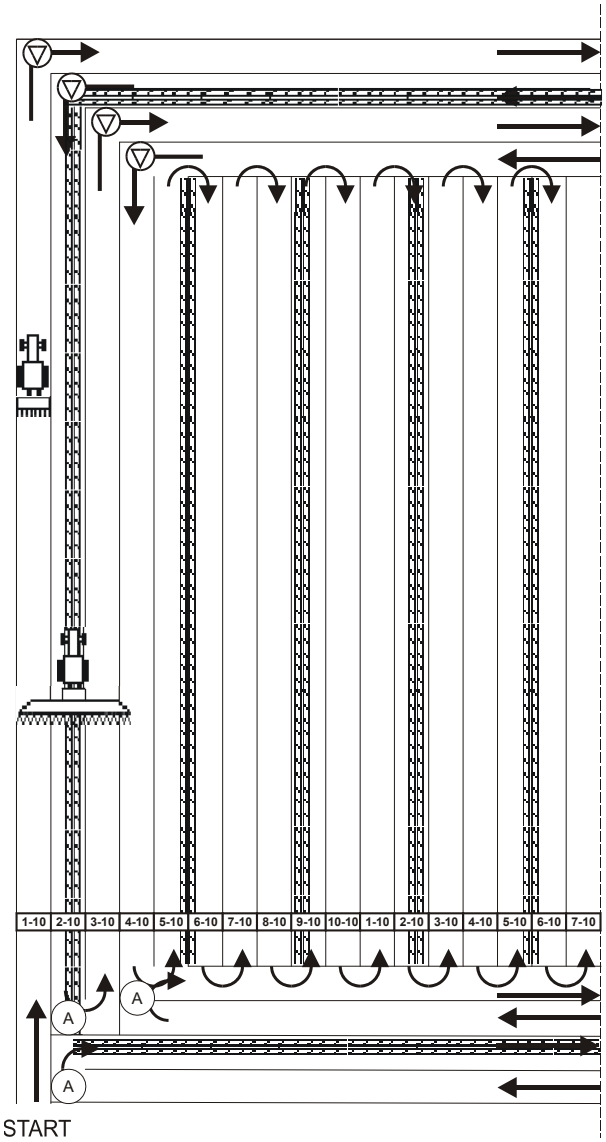
Example of method G Left:

The seed drill is fitted with 2x2 magnetic valves on the left-hand side of the seed drill and 1 magnetic valve on the right-hand side of the seed drill.

Drilling is started on the **left**-hand side of the field with the track number set to 1-10 as shown on the diagram. After the first bout around the field change direction to drive the other way around the filed, do this for the third and fourth bout also. Tramlines are made when the present track number is 2, 5, 6 and 9. Only one magnetic valve is activated on tracks 5 & 6.

Note where tracks **should** be counted (A) and where tracks **should not** be counted (all other corners) in the first 4 bouts around the field.

Track counting can be controlled by using either the "**HOLD**" key or by using the "**TRACK +/-**" keys.



METHOD H

This method is used when the seed drill is 6 metres wide and the implement used to cultivate the crop is 39 metres wide.

A fixed rhythm of 26 is used (see page 5.55)

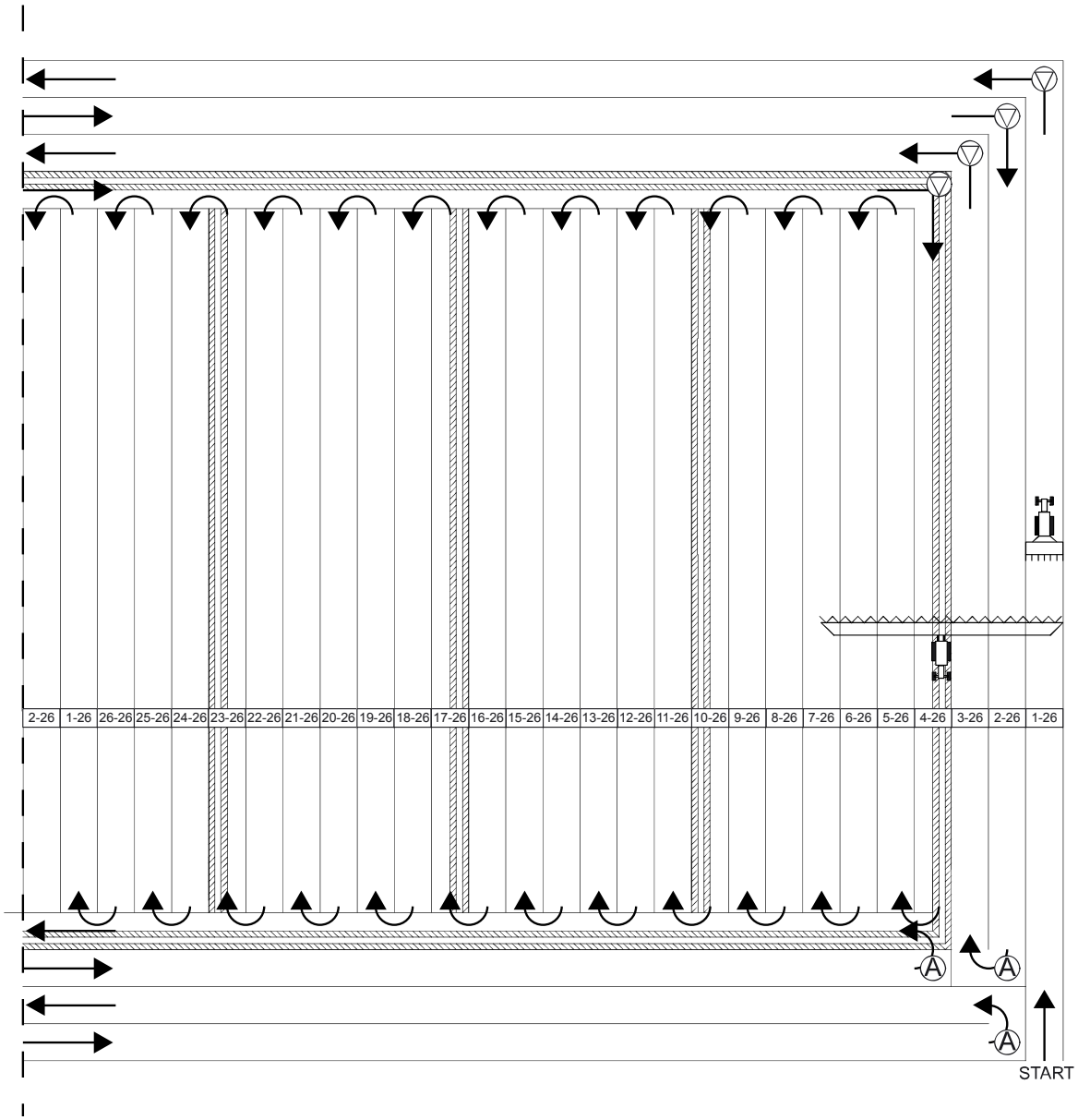
Example of method H Right:

The seed drill is fitted with 2x2 magnetic valves on the both sides of the seed drill.

Drilling is started on the **right**-hand side of the field with the track number set to 1-26 as shown on the diagram. After the first bout around the field change direction to drive the other way around the filed, do this for the third and fourth bout also. Tramlines are made when the present track number is 4, 10, 17 and 23.

Note where tracks **should** be counted (A) and where tracks **should not** be counted (all other corners) in the first 4 bouts around the field.

Track counting can be controlled by using either the "**HOLD**" key or by using the "**TRACK +/-**" keys.



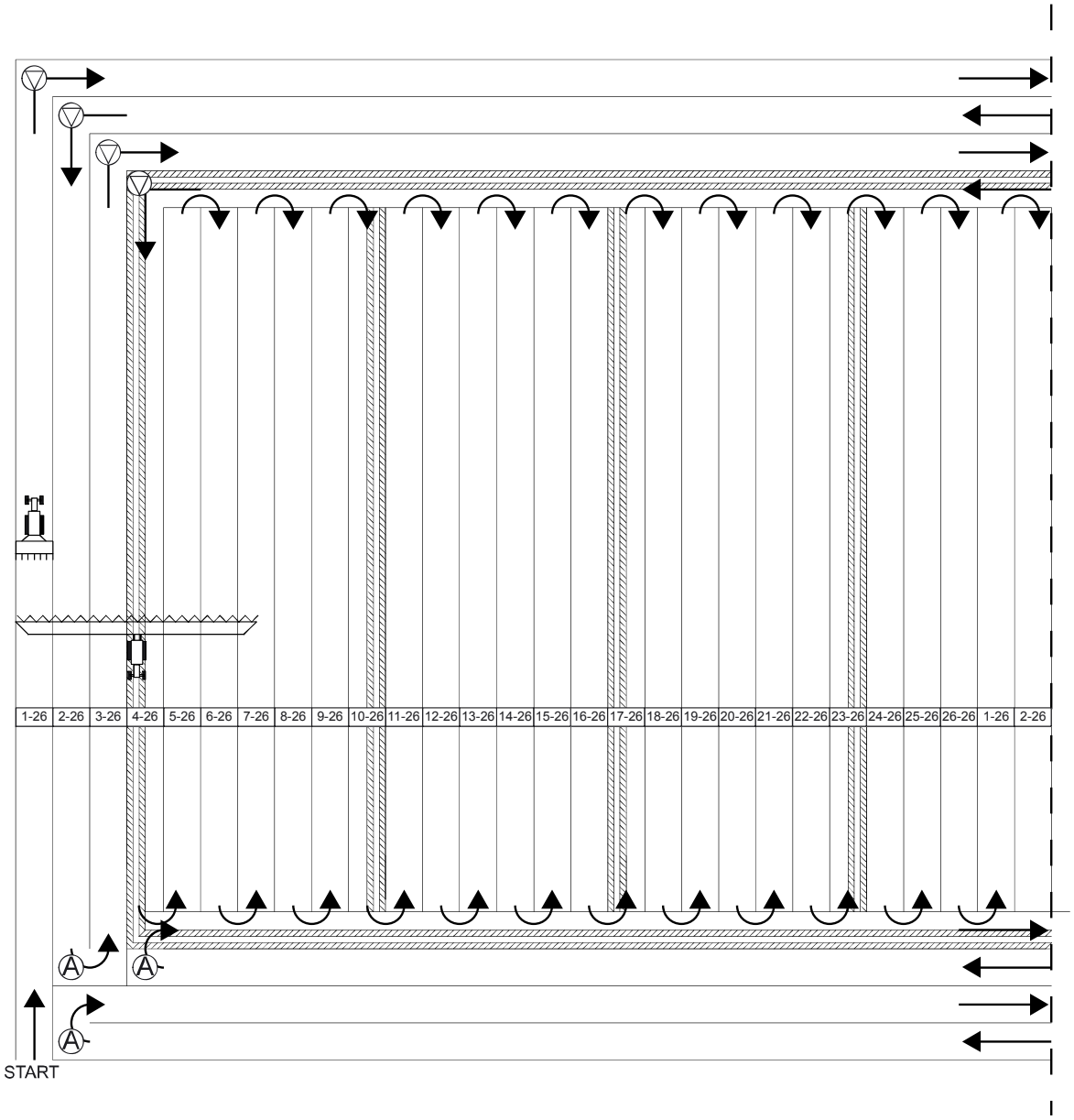
Example of method H Left:

The seed drill is fitted with 2x2 magnetic valves on both sides of the seed drill.

Drilling is started on the **left**-hand side of the field with the track number set to 1-26 as shown on the diagram. After the first bout around the field change direction to drive the other way around the filed, do this for the third and fourth bout also. Tramlines are made when the present track number is 4, 10, 17 and 23.

Note where tracks **should** be counted (A) and where tracks **should not** be counted (all other corners) in the first 4 bouts around the field.

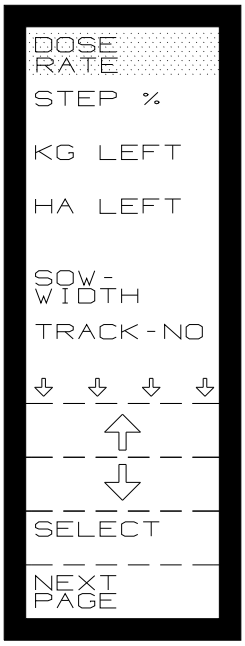
Track counting can be controlled by using either the "**HOLD**" key or by using the "**TRACK +/-**" keys.

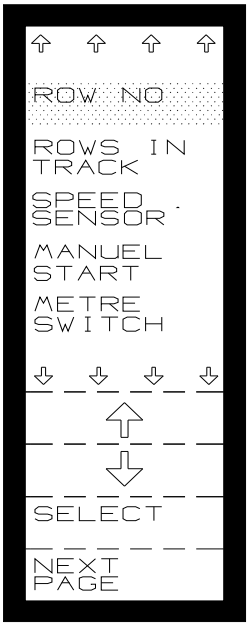


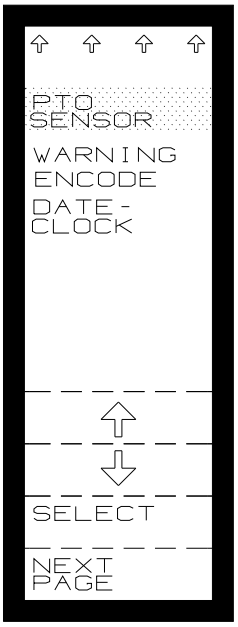
SEED DRILL ENCODEMENT

This menu allows the operator to encode the various settings that are necessary for sowing. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

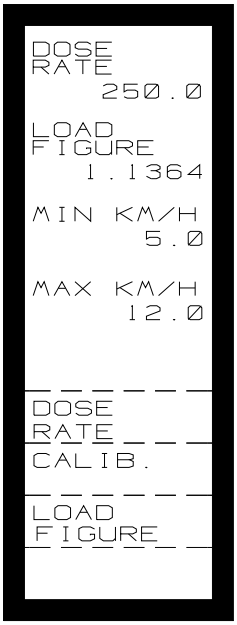
Always check these encodements in the status screen each time you change implements.







DOSE RATE



The required seed rate in kilo per hectare with 1 decimal is encoded here.

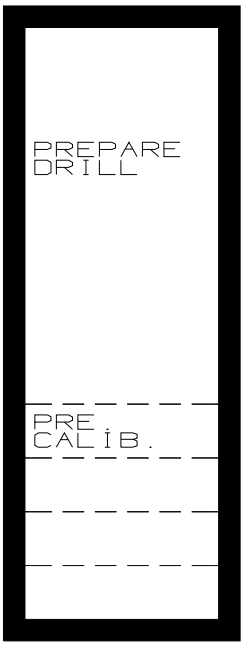
Before the system can be calibrated, it is necessary to encode the total working width of the seed drill.

If the encoded sow width is 0, the program will automatically change to sow width encodement, (remember that the effective sow width is encoded in centimetres), pressing return changes the screen back to the calibration screen.

LOAD FIGURE:

Pressing this key changes to a different screen where it is possible to encode **"GRAMS/PULSE"** should this be deleted by mistake.

CALIBRATION



Calibration is essential for correct operation of the system. The accuracy of all seed rates depends on this calibration.

Pressing the **"CALIB."** Key displays the screen to the left.

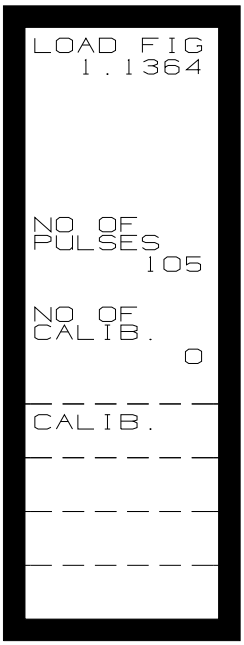
WARNING: The drill shaft rotates when "PRE. CALIB." is pressed.

Before pressing **"PRE. CALIB."** Ensure that the seed drill is full and that the equipment used for calibration is fitted.

The drill shaft will rotate for 10 seconds when **"PRE. CALIB."** Has been pressed to ensure that the feed rollers are full of seed.

(Remember to empty the calibration tray/bucket again before proceeding).

This screen is now displayed:



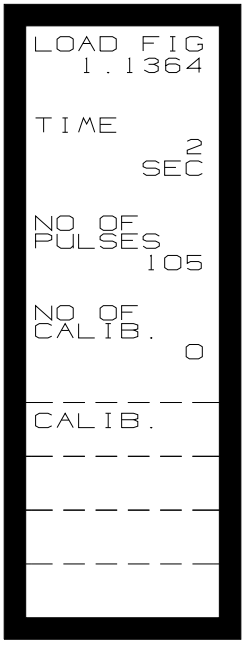
LOAD FIG: The previous load figure.

NO. OF PULSES: The pulses are counted during calibration.

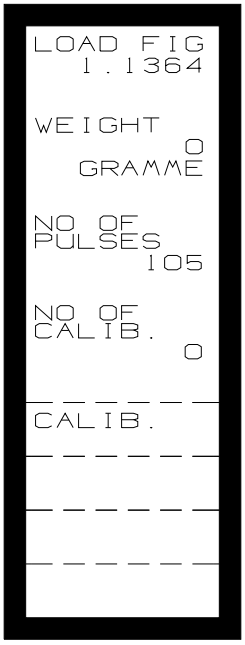
NO. OF CALIB: Shows the number of calibrations.

The drill shaft will rotate for 10 seconds when the **"CALIB."** Key is pressed.

The number of calibrations can be increased for each press of the key. This gives the possibility of varying the amount and therefore the weight of the released seed, so weighing in relation to the type of scales being used is as good as possible.



The screen changes once the drill shaft has rotated for the number of seconds encoded:



The weight of the released grain is encoded in grams under **"WEIGHT"**.

"CALC." flashes

Pressing **"CALC."** Will calculate a new load figure, which is displayed at the top of the screen.

The calibration procedure is now finished; pressing the return key brings the **"ENCODE"** menu back.

STEP%

The size of the steps, this percentile value is the same for both + and -.

KG LEFT

To see how much seed is left in the hopper, the amount filled into the seed drill must be encoded here.

NOTE: If there is some seed left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. left.

HA LEFT

Encode the size of the field to be sown before work commences. This encodement is also used to calculate end time.

SOW WIDTH

The total working width of the seed drill is encoded here in centimetres.

TRACK NUMBER

Encode the tramline rhythm here.

Example: The working width of the seed drill is = 3 m.

The working width of the fertiliser spreader/sprayer is = 15 m.

Track number = 15/3 = 5.

The tramlining method to be used is also selected here (**A, B, C, D, E, F, G, H Right/Left**). The methods are described in the "seed drill operation" section.

NOTE! It is not possible to alter the track number if either method C, D, E, F, G, or H have been selected as these methods have a set track number.

ROW NO.

Encode the total number of rows that the seed drill has.

NUMBER OF RETURNS

If the seed drill is fitted with a return to tank when tramlines are made the number of tubes returning seed to the hopper should be encoded here.

If the seed drill is not fitted with a return to tank then this should be set to 0.

ROWS IN TRACK

Encode the number of rows that are shut when tramlines are being made. This encodement is necessary for correct KG metering.

If the sown amount is not reduced when making tramlines encode 0.

NB: Pneumatic seed drills do not reduce the amount when tramlines are being made.

FORWARD SPEED SENSOR

There is a speed sensor fitted to the seed drill that gives a suitable number of pulses for the TeeJet 5000. With the future in mind the computer is also able to receive signals from a sensor fitted onto a tractor or a radar sensor.

Please refer to chapter 2 for forward speed calibration.

MANUAL START

Encode the number of seconds that the drill shaft will rotate for when **"MANUAL START"** is pressed, max. 20 seconds.

METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

PTO SENSOR

Encode the number of pulses per revolution for the PTO sensor (encode 1 if the TeeJet PTO sensor kit (932-983) is used).

WARNINGS

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

KG LEFT: Warning **ON/OFF** and amount of kg (min.) in the hopper at which the warning is wanted.

D. SHAFT: Warning **ON/OFF** if the drill shaft stops turning.

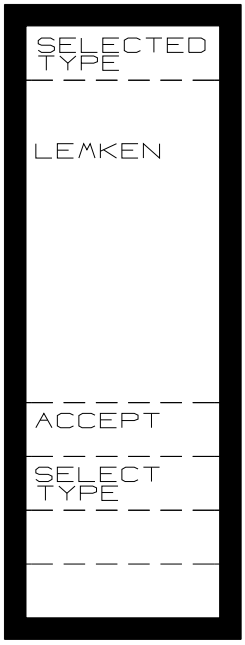
HOPPER: Warning **ON/OFF** for empty seed hopper.

RPM: Warning **ON/OFF** and **MIN/MAX**-limits for fan RPM

NB: If the warning for RPM is “on” then the computer will not allow sowing to commence before it receives signals from the fitted RPM sensor.
If the warning is “off” then sowing is independent of the RPM sensor.

WARN DOSE AREA

The dose rate warning is a fixed warning, which cannot be switched off. As the program is used for a number of different seed drills, used under various working conditions it is possible to set the warning so that unwanted warnings are not given. This is done under the main menu for the Lemken seed drill program.



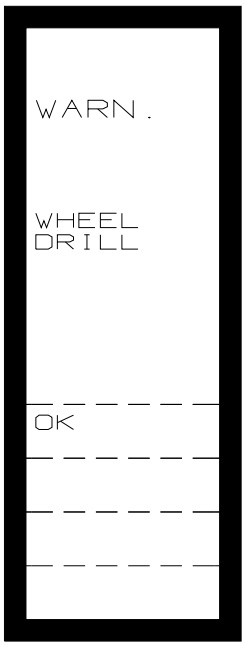
Pressing the ”**HOLD**” key for 5 seconds when this display is shown (see page 5.32) allows for programming an application rate alarm.

%: Encode the percentile deviation that is allowed before the warning is given (standard = 5%).

Time: Encode the number of seconds that the above deviation is allowed before the warning is given (standard = 20 seconds).

RPM: Encode the minimum RPM for the motor that drives the drill shaft. The minimum RPM is used, amongst others, to calculate the forward speed limits given during a seed calibration (standard value for newer machines (no gearbox) = 150 RPM, for older machines (with gearbox = 300 RPM).

WARN WHEEL DRILL



All other alarms require the wheel sensor to be generating pulses. To avoid large bare patches, should the wheel sensor be damaged, and therefore the computer receives no pulses, even if the drill is lowered, the warning WHEEL DRILL will be given after approx. 15 seconds. The warning is automatically removed when the computer receives pulses from the wheel sensor or when the seed drill is raised. Pressing the **“OK”** key will remove the warning for approx. 15 seconds.

DATE - CLOCK:

Set the date and time in this menu:

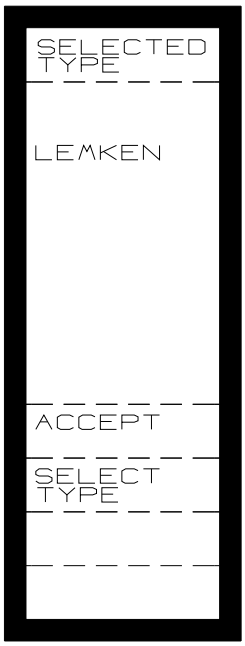
HOURS – MINUTES- YEAR – MONTH – DAY.

NORMAL START

As the motors used for altering the seed rate must be started at a certain level before being able to adjust the seed rate up or down it is necessary to decide at what speed the motors should start.

This is encoded as a forward speed. The motor will start with the RPM required to sow at the given forward speed.

To encode the forward speed at which the motor should start at do as follows:

1 

When this is shown in the display (see page 5. xx) press and hold the "**HOLD**" key for 5 seconds.

2 Select "START KM/H" and encode the forward speed that the motor should start at.

Min. = 1.5 kph

Max. = 3.0 kph

Seed drill, Simba

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- HOLD KEY 5.64
- TRAMLINE INDICATOR 5.64
- FORWARD SPEED 5.64

TRAMLINE CONTROL 5.65
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- METHOD B 5.65
- METHOD A UNEVEN 5.66
- METHOD A EVEN 5.67
- METHOD B UNEVEN 5.68
- METHOD B EVEN 5.69

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- KG LEFT 5.71
- HA LEFT 5.71
- TRACK NUMBER 5.71
- SOW-FIGURE 5.71
- ROW NO. 5.72
- ROWS IN TRACK 5.72
- SOW WIDTH 5.72
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  - WHEEL DRILL 5.72
  - RADAR 5.72
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- METRE SWITCH 5.73
- WORK HOUR ON/OFF 5.73
- REVS. SENSOR 5.73
- WARNING ENCODE 5.74
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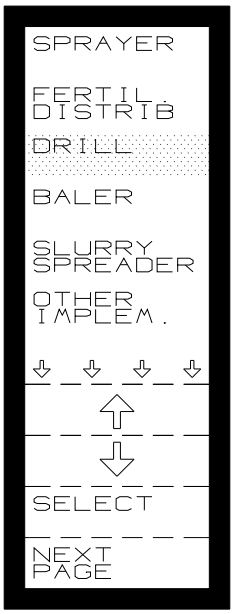
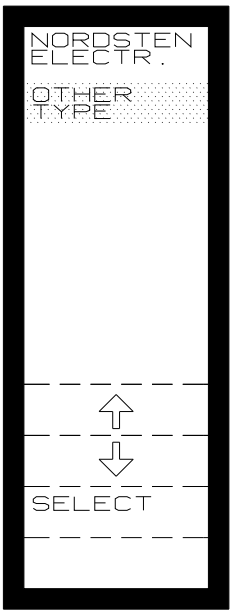
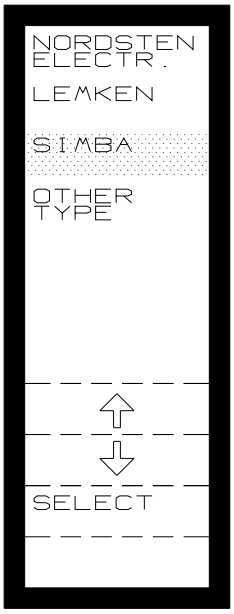
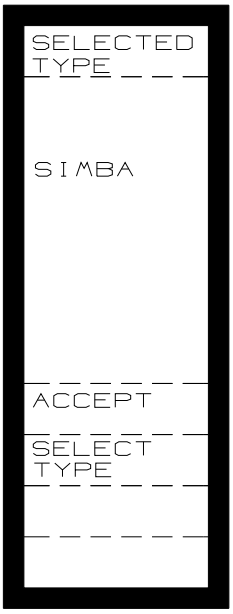
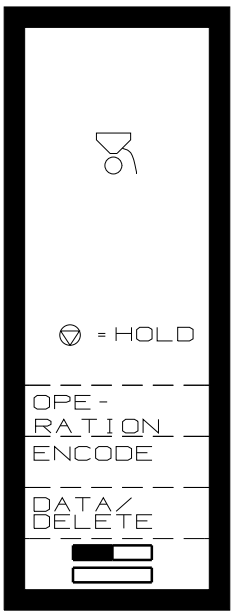
SEED DRILL (SIMBA)











Select drill from the main menu:

1. Move the cursor using the arrow keys to **"DRILL"** when this is done press the **"SELECT"** key.

2. Main menu: Drill.

3. **"ACCEPT"** the selected type or choose another type.

4. Select type.

5. It is now possible to choose between the displayed types.

6. Select the drill type.

7. ACCEPT

NOTE: NORDSTEN ELECTR. Is only for NORDSTEN drill with electronic gearboxes.

It is now possible to select between the following functions:

OPERATION

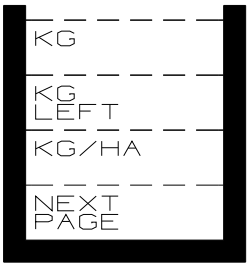
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

SEED DRILL OPERATION



KG: The amount sown in KG.

KG LEFT: The amount in KG of seed left in the hopper

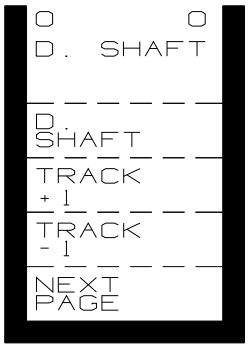
KG/HA: Seed rate in KG/HA

KG: The amount sown in KG, measured by a sensor fitted on the drill shaft. Calibrating the system is necessary to ensure correct operation and this is done under **"ENCODE"**.

KG LEFT: The amount in KG of seed left in the hopper (the amount filled in must be encoded before work commences).

KG/HA: Seed rate in KG/HA.

Pressing the **"NEXT PAGE"** key displays the next available functions.



D. SHAFT: Drill shaft speed.

TRACK+1: Moves one step forward in the tramline rhythm.

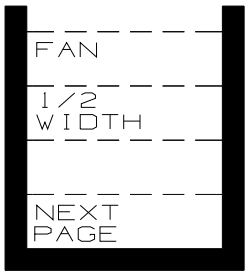
TRACK-1: Moves one step backwards in the tramline rhythm.

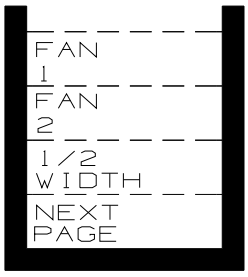
D. SHAFT: Revolutions per minute for both drill shafts.

TRACK+1: Moves one step forward in the tramline rhythm.

TRACK-1: Moves one step backwards in the tramline rhythm.

Pressing the **"NEXT PAGE"** key displays the next available functions.





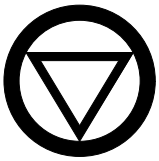
FAN: Revolutions per minute for the fan.
(if **"2 FANS OFF"** is selected. See page 5.70)

FAN 1:
FAN 2: Revolutions per minute for both fans.
(if **"2 FANS ON"** is selected. See page 5.70)

1/2 WIDTH:
1/1 WIDTH: reduces the drill width by one half of the encoded. When 1/2 WIDTH is selected, the function of the key changes to 1/1 WIDTH and the drill width is returned to the encoded working width by pressing this key.

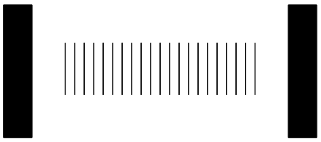
Pressing the **"NEXT PAGE"** key displays the first available functions.

HOLD KEY

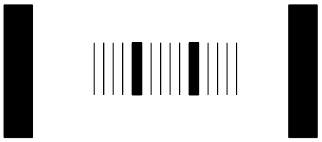


Press this key if the present bout is not required in the selected rhythm. This function "holds" the present status regardless of how many times the drill is raised. When this function is activated, **"HOLD"** flashes on the display.

TRAMLINE INDICATOR



No tramlines are made.



Tramlines are made.

FORWARD SPEED

The forward speed is displayed in kilometres per hour with 1 decimal. The forward speed is calculated from signals received from the sensor selected under **"ENCODE"** (wheel tractor or radar).

TRAMLINE CONTROL

The primary function for seed drills is the track number. The following picture is displayed:

Bout number Track number

The bout number is the present bout being driven in the field (counts 1 each time the drill is lifted). The track number is what has been encoded (see **"ENCODE"**).

The TeeJet 5000 has 2 different methods of controlling the tramlines (**A** and **B**). The method is selected under **"ENCODE"**:

METHOD A

This method is a new and logical method of making tramlines.

If the tramlines are to be made on uneven bouts (3,5,7, or 9) then the tramlines will **always** be made in the middle bout. Two clutches are fitted to the middle of the drill. See the drawing for **METHOD A UNEVEN**.

If the tramlines are to be made on even bouts (2,4,6, or 8), then the tramlines are split between the 2 middle bouts. The field must be sown up and down as there is only 1 clutch fitted on one side of the seed drill. See the drawing for **METHOD A EVEN**.

The tramlines are displayed for this method thus:

METHOD B

This method is older and better known. Tramlines are made when the present bout is the same as the track number. The operator must know how the field has been started.

If tramlining is required in on uneven bouts (3,5,7, or 9) the system works well. Tramlines are made, using 2 clutches fitted in the middle of the seed drill, when the present bout number is the same as the encoded track number. See the drawing **METHOD B UNEVEN**.

If the tramlines are to be made on even bouts (2,4,6, or 8), then the operator must drive around the field with only one half of the seed drill open. This is necessary, as the tramlines cannot be split over 2 bouts. The clutches are fitted in the middle of the seed drill, and the tramlines are made in one bout. See the drawing **METHOD B EVEN**.

METHOD A UNEVEN

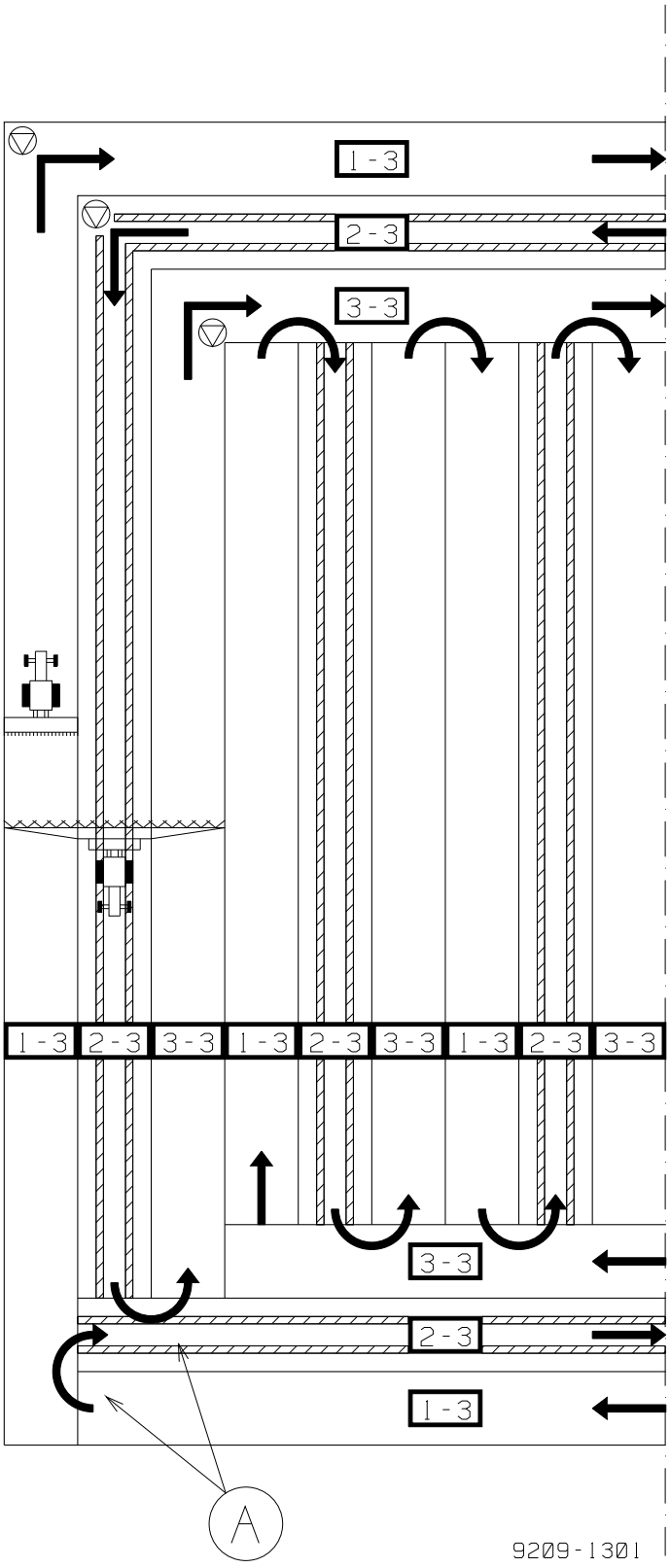
In the example to the right the encoded rhythm is 3. Two clutches are fitted in the middle of the drill.

NB!

Tramlines are made in bout number 2 when a rhythm (track number) of 3 is encoded.

Note where, in the first 3 bouts around the field, the present bout **should** (A) be counted and where the bout **should not** be counted. After each trip around the field the machine drives in the opposite direction.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



METHOD A EVEN

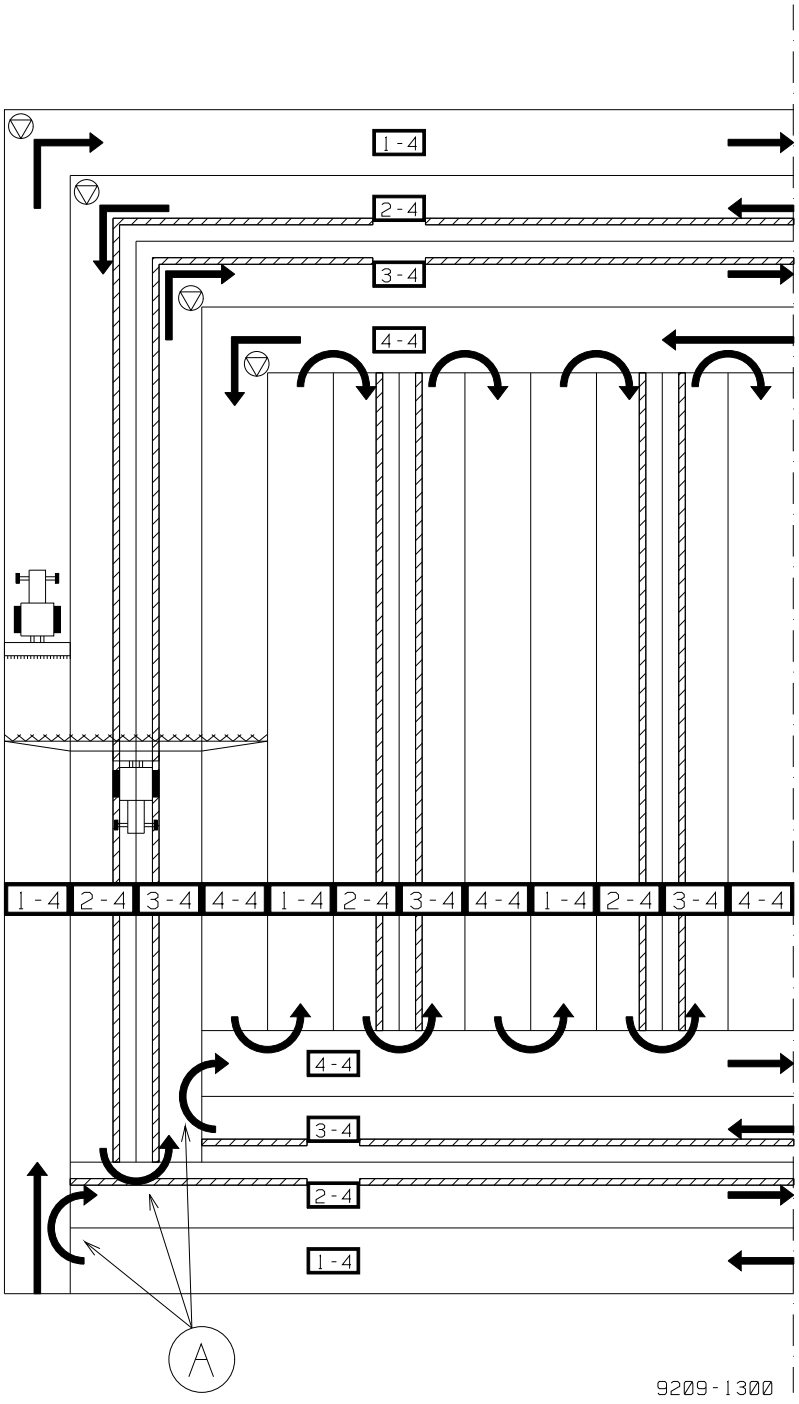
A rhythm of 4 is encoded in this example. A single clutch is fitted on the left-hand side of the seed drill.

NB!

Tramlines are made in bout numbers 2 and 3 (split), when a rhythm of 4 is encoded.

Note where, in the first 4 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners). After each trip around the field the machine is turned around, and is driven in the opposite direction.

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



METHOD B UNEVEN

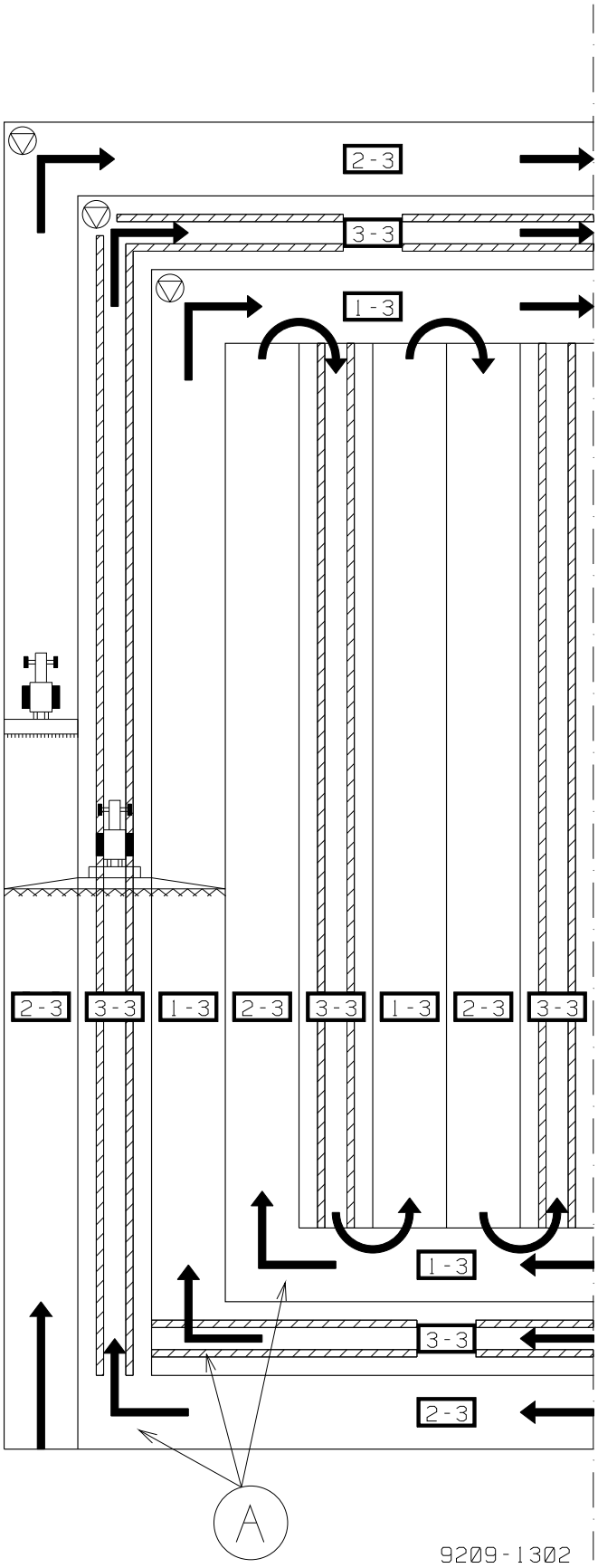
A rhythm of 3 is encoded in this example and there are 2 clutches fitted in the middle of the seed drill.

NB!

Tramlines are made when the present bout is the same as the encoded rhythm (track number).

Note where, in the first 3 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners).

Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.



METHOD B EVEN

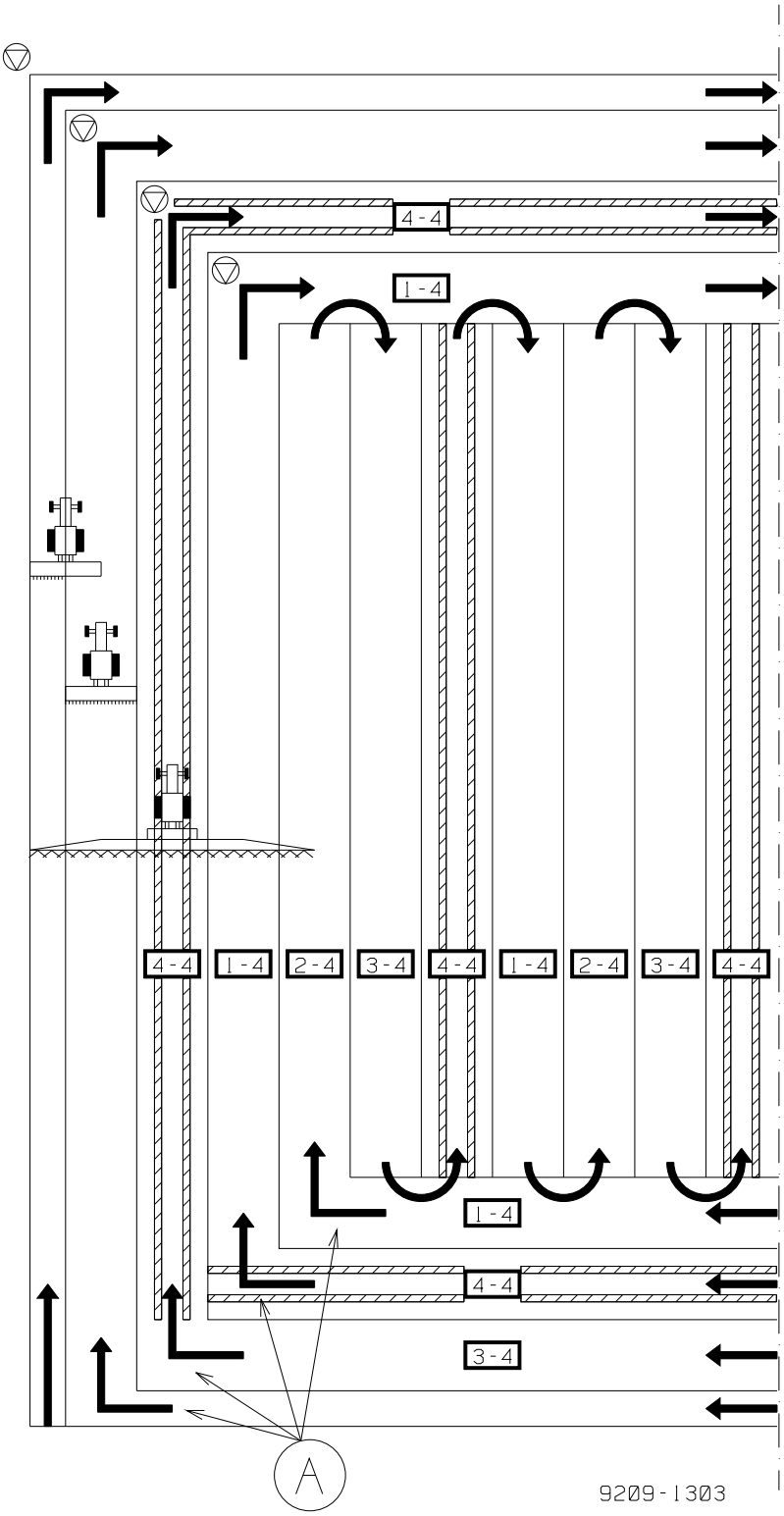
The tramline cannot be split over 2 bouts in this example with a rhythm of 4 encoded. The first bout can only be sown with one half of the drill open. Once this is done the tramlines can be made with clutches fitted to the middle of the drill.

NB!

Tramlines are made when the present bout number is the same as the encoded rhythm (track number).

Note where, in the first 4 bouts around the whole field, the bouts **should** be counted (A) and where bouts **should not** be counted (all other corners).

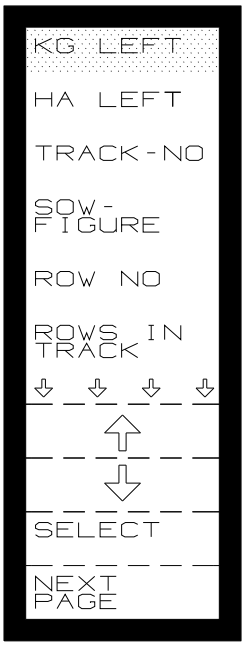
Bout counting can be controlled by using either the **"HOLD"** key or by using the **"TRACK +/-"** keys.

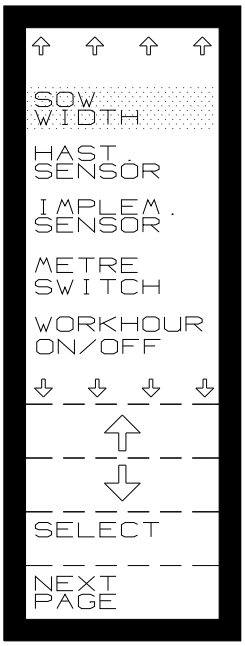


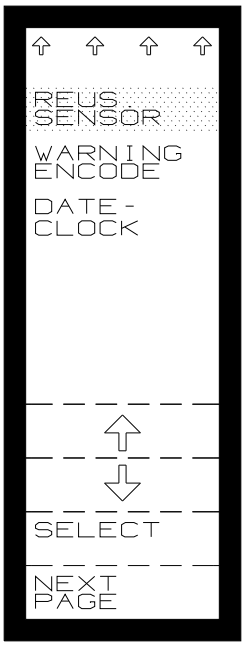
SEED DRILL ENCODEMENT

This menu allows the operator to encode the various settings that are necessary for sowing. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

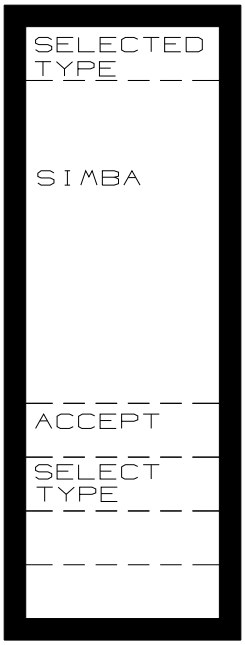
Always check these encodements in the status screen each time you change implements.







FAN NUMBER SELECTION



1. Press and hold the HOLD key for min. 5 seconds when the above screen is displayed (see page 5.32).
2. Move the cursor to "FAN 2" and it is now possible to select whether the drill is equipped with 1 or 2 fans.

KG LEFT

To see how much seed is left in the hopper, the amount filled into the seed drill must be encoded here.

NOTE: If there is some seed left in the hopper before refilling, then this amount must be added to the amount filled thus:

Amount left in hopper + filled amount = Kg. left.

HA LEFT

Encode the size of the field to be sown before work commences. This encodement is also used to calculate end time.

TRACK NUMBER

Encode the tramline rhythm here.

Example: The working width of the seed drill is = 3 m.

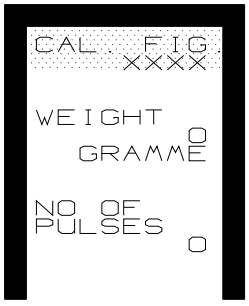
The working width of the fertiliser spreader/sprayer is = 15 m.

Track number = 15/3 = 5.

The tramlining method to be used is also selected here (**A** & **B**). The methods are described in the seed drill operation section.

SOW-FIGURE

The seed drill ***must*** be ready for calibration ***before*** pressing this key (remember to turn the drill shaft a few times to fill the feed rollers). Press the key and the following is displayed.



NB: All counters used for calibration are zero set when this screen is displayed. ***Never*** turn the drill shaft until you are ***completely*** ready to calibrate the drill. **"NO. OF PULSES" must be 0 before starting calibration.**

1. Select the **"SOW-FIGURE"** menu. If any pulses have been counted, press the **"RETURN"** key and select **"SOW-FIGURE"** again.
2. Turn the drill shaft as described in the calibration table for the seed drill.
3. When the manual calibration is finished, weigh the amount released.
4. Using the arrow down key move the cursor to **"WEIGHT"**, and encode the weight of the released amount using the numerical keypad.
5. Press the flashing **"CALC."** Key.

   The computer divides the weight released by the number of pulses counted and the calibration procedure is finished. The calculated value is displayed at the top of the screen, note this figure if the computer is to be used with other seed drills using other calibration figures. The value can be encoded directly using the numerical keypad.

ROW NO.

Encode the total number of rows that the seed drill has.

ROWS IN TRACK

Encode the number of rows that are shut when tramlines are being made. This encodement is necessary for correct KG metering. If the sown amount is not reduced when making tramlines encode 0.

SOW WIDTH

The seed drill's effective working width in Cm.

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 seed drill program (Simba) gives the option of choosing between three different speed sensors (Wheel tractor, wheel drill, or Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for sowing.

WHEEL DRILL

If a speed sensor is fitted on the seed drill then use this sensor as the sensor will give a suitable number of pulses.

RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar. Radar and the number of pulses per metre will be displayed at the top of the screen.

Please refer to chapter 2 for forward speed calibration

IMPLEMENT SENSOR

The implement override sensor starts and stops area counting and counts bouts.

Pressing this key gives the following options:

1. **3-point external (lift arms)**
2. **3-point DIN/ISO (built into the tractor)**
3. **Seed drill**

The selected sensor is shown at the top of the display.

METRE SWITCH

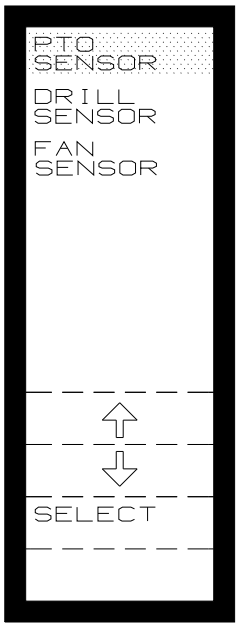
Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR

Encode the number of pulses the sensors fitted to the drill shaft give per revolution. It is also possible to select between clutch monitoring and RPM monitoring (monitoring fan speed on pneumatic machines).



PTO SENSOR

Encode 1 if the TeeJet PTO sensor kit (932-983) is used.

DRILL SHAFT SENSOR

Encode the number of pulses the sensor fitted to the drill shaft gives per revolution (sensors that generate fewer than 4 pulses per revolution **cannot** be used).

FAN SENSOR

Encode the number of impulses the sensor gives per revolution.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

KG LEFT: Warning **ON/OFF** and amount of kg (min.) at which the warning is wanted.

D. SHAFT: Warning **ON/OFF** if the drill shaft stops turning.

HOPPER: Warning **ON/OFF** for empty seed hopper.

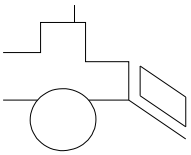
FAN: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH – DAY.

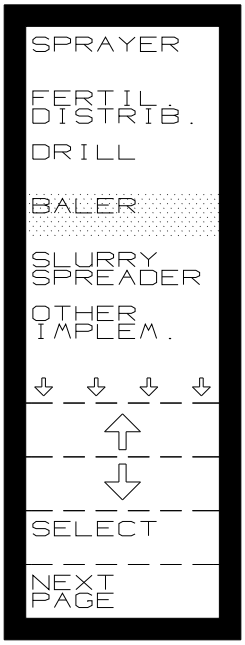
Baler



BALER 6.2
BALER OPERATION 6.3
BALER FUNCTIONS 6.3
    SWITCHING ALL WARNINGS OFF 6.4
BALER ENCODE 6.5
    WEIGHING (RPM3) 6.5
    FORWARD SPEED SENSOR 6.6
    REVS. SENSOR 6.7
    WARNINGS 6.7
    DATE - CLOCK: 6.7

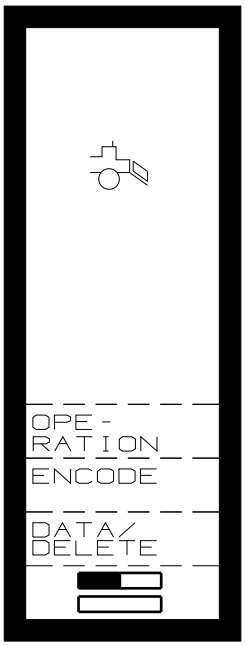
BALER

Select baler from the main menu as follows:



Move the cursor using the arrow keys to **"BALER"** when this is done press **"SELECT"**.

The following is displayed:



It is now possible to select between the following functions:

OPERATION

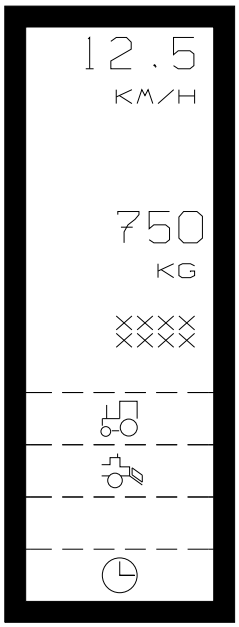
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

BALER OPERATION



FORWARD SPEED:

The primary function under baler is forward speed. Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the speed sensor selected in **"ENCODE"** (wheel tractor or radar).

WEIGHT/RPM 3:

The secondary function is either weight or RPM (selected under **"ENCODE"**).

Weight displayed in KG is possible if the baler is fitted with a weighing mechanism.

RPM 3 should be selected if the baler is not fitted with a weighing mechanism; RPM is displayed instead of weight.

BALER FUNCTIONS

The TeeJet 5000 when used with a baler fitted with a weight system (large bales), weighs each bale individually. The TeeJet 5000 **cannot** however record the weight of all the bales baled. If no weighing system is connected to the TeeJet 5000, then RPM will be displayed instead of weight. Select which is to be used under **"ENCODE"**.

Functions with weigh system

RPM 1:

Shaft speed of axle no. 1.

RPM 2:

Shaft speed of axle no. 2.

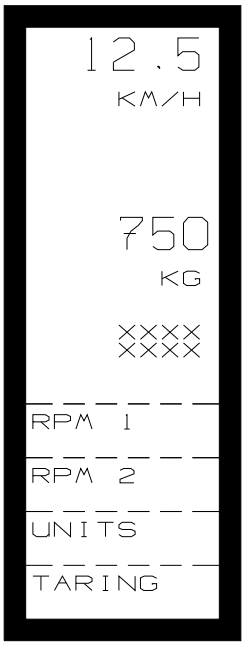
UNITS:

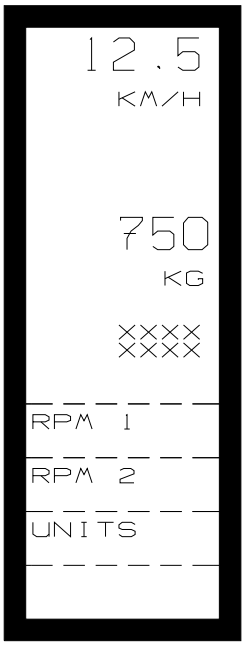
Total bales (bale counter).

TARRING:

Zero setting the weigh system.

Functions without weigh system





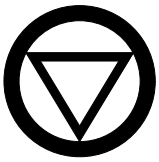
RPM 1: Shaft speed for axle no. 1 (choose when fitting the system). A warning can be set on or off plus the number of pulses per rev. are set under **"ENCODE"**.

RPM 2: Shaft speed for axle no. 1 (choose when fitting the system). A warning can be set on or off plus the number of pulses per rev. are set under **"ENCODE"**.

UNITS: The number of bales counted is displayed in **"OPERATION"** as a trip counter. A total counter is found under **"DATA/DELETE"**, both counters are deleted in **"DATA/DELETE"**.

TARRING: Pressing this key zero sets the weighing system (the weight must be empty). The weighing system must be calibrated as described in the **"ENCODE"** section.

SWITCHING ALL WARNINGS OFF

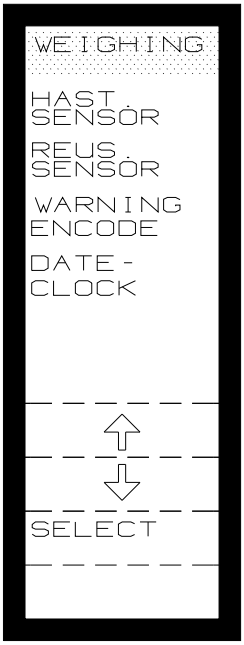


Pressing the **"HOLD"** key switches all warnings off; R is displayed in the bottom left-hand side of the display. The warnings can be switched on again by pressing the **"HOLD"** key once more.

BALER ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.



WEIGHING (RPM3)

Selecting this encodement gives you 2 options:

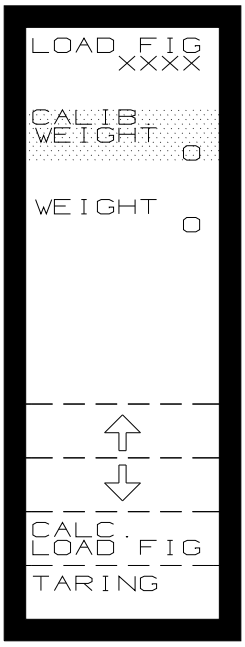
1. **WEIGHING**
2. **RPM3**

WEIGHING (bale weight).

A new function key is displayed when weighing is selected, **"CALIB. CALC."**

CALIBRATION:

Pressing this key displays the following:



Method:

Without anything on the weighing system, press **"TARRING"**

Place a known weight on the weighing system, the weight must be at least half of the weighing capacity of the system (the more the better).

Using the arrow keys, move the cursor to **"CALIB. WEIGHT"** and encode the weight in KG using the numerical keypad.

Press the flashing **"CALC: LOAD FIG"** key. The calculated load figure is displayed at the top of the screen, note this figure in case the value is deleted by mistake.

RPM3: If no weighing system is fitted, it is possible to see the shaft speed of an axle (RPM 3). Regardless of which of these 2 functions has been selected it will always be displayed as one of the 2 fixed functions under **"OPERATION"**

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 baler program gives the option of choosing between 2 different speed sensors (Wheel tractor, Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for baling.

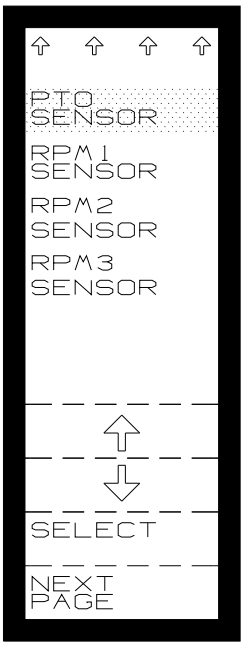
RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar. Radar and the number of pulses per metre will be displayed at the top of the screen.

Please refer to chapter 2 for forward speed calibration.

REVS. SENSOR

The number of pulses per revolution for the individual shaft speed sensors is encoded here.



PTO SENSOR: If the TeeJet PTO sensor is used (932-983) then encode “1”.

RPM1: If the TeeJet sensor set is used (930-983) then encode “1”.

RPM 2: If the TeeJet sensor set is used (930-983) then encode “1”.

RPM3: If the TeeJet sensor set is used (930-983) then encode “1”.

WARNINGS

PTO: Warning **ON/OFF** and **MAX/MIN-**limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN-**limits for forward speed.

SLIP: Warning **ON/OFF** and **MAX/MIN-**limits for wheel slip in %.

RPM1: Warning **ON/OFF** and **MAX/MIN-**limits for revolutions. Encode as RPM

RPM2: Warning **ON/OFF** and **MAX/MIN-**limits for revolutions. Encode as RPM

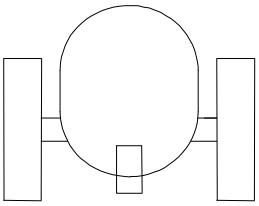
RPM3: Warning **ON/OFF** and **MAX/MIN-**limits for revolutions. Encode as RPM

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

Slurry spreader

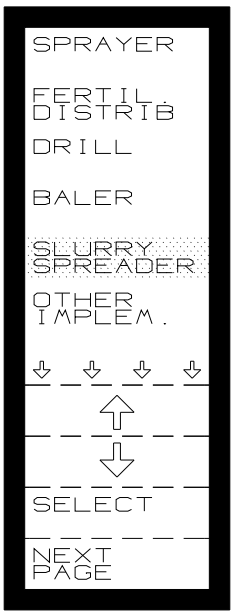


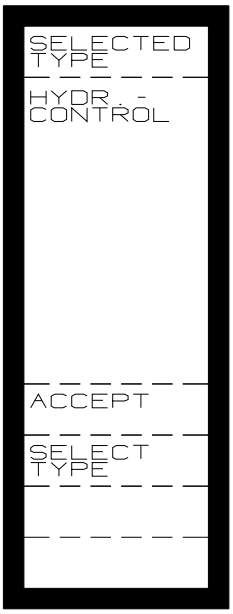
SLURRY SPREADER, OTHER TYPE 7.1
SLURRY SPREADER, HYDRAULIC CONTROL 7.15
SLURRY SPREADER, HORSCH 7.27
SLURRY SPREADER, ZUNHAMMER 7.41

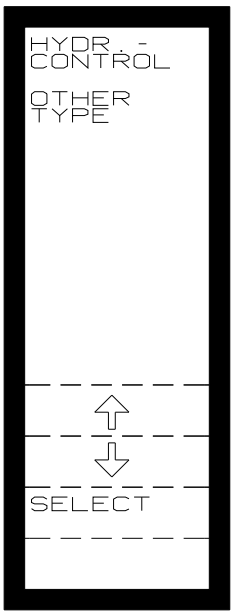
Slurry spreader, Other type

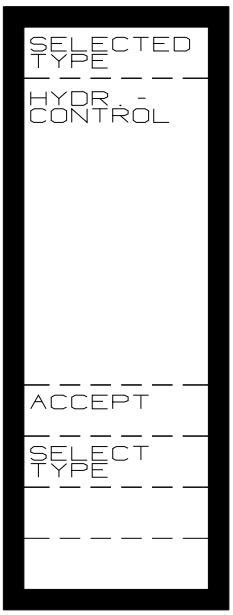
SLURRY SPREADER 7.2
SLURRY SPREADER OPERATION 7.3
SLURRY SPREADER FUNCTIONS: WITH FLOWMETER 7.3
SLURRY SPREADER: WITHOUT FLOWMETER 7.5
SLURRY SPREADER ENCODE 7.7
- DOSERATE 7.7
- STEP %: 7.7
- TANK VOLUME 7.8
- FILLED VOLUME 7.8
- HA LEFT 7.8
- FLOW FIGURE 7.8
- BOOM WIDTH 7.9
- DRIVE FACTOR 7.9
- UNIFORM PRESSURE 7.9
- FORWARD SPEED SENSOR 7.10
  - WHEEL TRACTOR 7.10
  - RADAR 7.10
  - WHEEL SLURRY SPREADER 7.10
- IMPLEMENT SENSOR 7.10
- METRE SWITCH 7.10
- SYSTEM B PLUG 7.11
- WORK HOUR ON/OFF 7.11
- REVS. SENSOR 7.11
- WARNING ENCODE 7.12
- DATE - CLOCK: 7.12

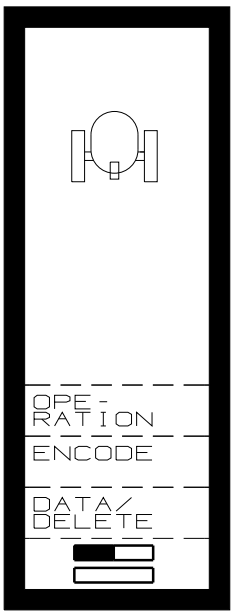
SLURRY SPREADER











Select slurry spreader from the main menu as follows:

1. Using the arrow keys move the cursor over **"SLURRY SPREADER"**. Press **"SELECT"**.

2. Main menu
   - select slurry spreader

3. Accept the selected type or choose another type.

4. Select type

5. It is now possible to choose between the displayed types.

6. Select the slurry spreader type.

7. Accept

It is now possible to select between the following functions:

OPERATION

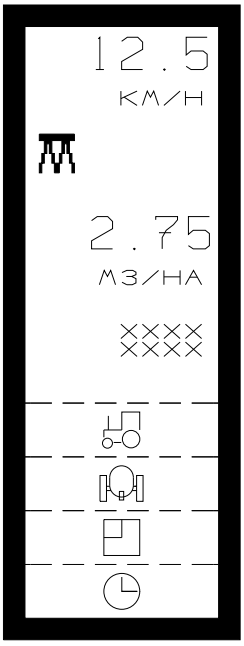
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

SLURRY SPREADER OPERATION



APPLICATION RATE:

The primary function for slurry spreaders is application rate. The application rate is displayed in TON/M3 per hectare. This rate is calculated from the flow through the flowmeter and area measurement (forward speed and working width). It is therefore necessary to both drive and spread to see this function.

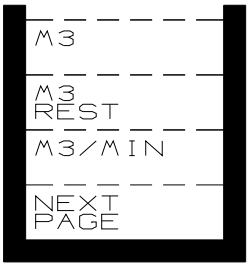
NOTE: To ensure correct operation the flowmeter must be calibrated, the correct wheel circumference and the correct working width must be encoded.

FORWARD SPEED:

Forward speed is displayed in kilometres per hour with 1 decimal. Forward speed is calculated using the sensor selected under encode (wheel tractor, wheel spreader or radar).

NOTE: Remember to reset all counters in **"DATA/DELETE"** before starting.

SLURRY SPREADER FUNCTIONS: WITH FLOWMETER



The metered amount can be displayed in either **TON** or **M3** (cubic metres). These options are selected in encode under **"DOSERATE"**.

TON/M3: Slurry consumption in ton or M3.

TON/M3 REST: The amount left in the tank.

(TON/M3)/MIN: Consumption per minute.

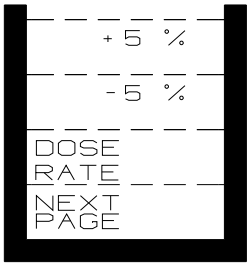
TON/M3: The amount of slurry spread since starting. This function works as a trip counter, and can be deleted in **"DATA/DELETE"**. The total counter is also found here.

TON/M3 REST: The amount remaining in the tank. This function presupposes encodement of the tank size **"TANK VOLUME"** in encode. Every time **"TANK EMPTY"** is pressed, the tank size is transferred to **"TON/M3 REST"** and the slurry spreader is ready to fill and spread again.

This function is also used in conjunction with flowmeter calibration (see page number 7.8).

(TON/M3)/MIN: The amount of slurry per minute going through the flowmeter.

Pressing **"NEXT PAGE"** displays the next possible functions.



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

NORMAL: Return to the required normal application rate.

DOSE RATE: Encoding the required application rate.

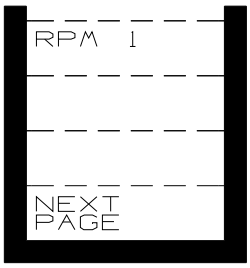
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step feature has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next functions.

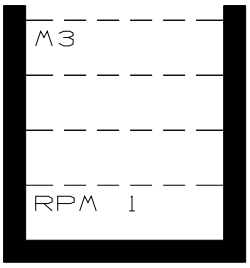


RPM 1: Revolutions per minute.

RPM 1: The shaft speed of an axle is displayed here. Normally the RPM of the distributor/macerator.

Pressing the **"NEXT PAGE"** key displays the first set of functions.

SLURRY SPREADER: WITHOUT FLOWMETER



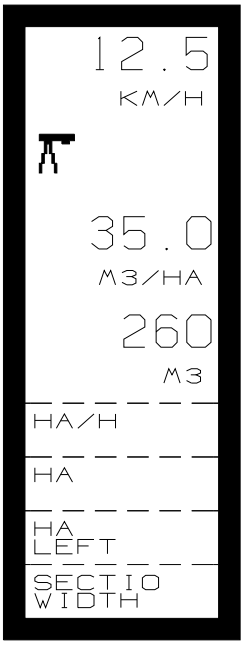
TON/M3: Slurry consumption in ton/m3.

RPM 1: Revolutions per minute.

TON/M3: The amount of slurry spread since starting. This function works as a trip counter, and can be deleted in **"DATA/DELETE"**. The total counter is also found here.

RPM 1: The shaft speed of an axle is displayed here. Normally the RPM of the distributor/macerator.

MANUAL BOOM SECTIONS:



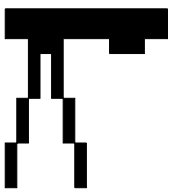
SECTION WIDTH:

When working with 2 boom sections, the boom section that is encoded as section 2 can be "switched" on or off by pressing **"SECTION WIDTH"**. Area measurement and flow will now be calculated correctly for the section that is still on.

Conditions for manual section width:

Only 2 sections must be encoded and the part of the boom to be switched off must be encoded as section 2.

BOOM SECTIONS ON/OFF:



The picture shows that the spreader has 2 sections and only one is open. The total number of sections must be encoded in **"DISTRIB. WIDTH"**.

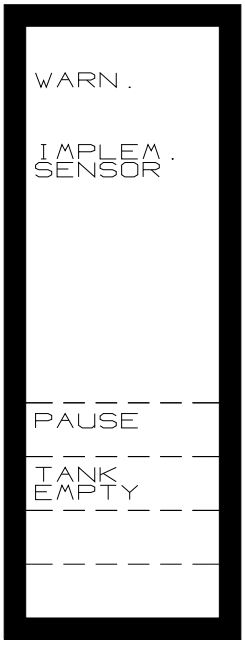
I

When the override sensor is activated (not measuring area "I" is displayed.

DAILY USE OF THE SLURRY PROGRAM *WITH* A FLOWMETER

Once all of the encodements have been accepted, proceed as follows:

Start spreading and each time the area override sensor is activated (implement sensor) the following warning is displayed:



When this screen is displayed you have the following options:

If the machine is turning at the headland, then continue driving and the warning screen will disappear when spreading starts again.

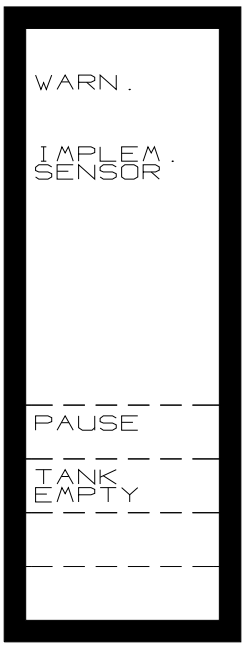
If you stop spreading temporarily **without** the tank being empty, press **"PAUSE"** to remove the warning. The warning screen will disappear when spreading starts again.

If the tank is empty, press **"TANK EMPTY"**. The value encoded under **"TANK VOLUME"** will be automatically transferred to **"TON/M3 LEFT"**.

DAILY USE OF THE SLURRY PROGRAM *WITHOUT* A FLOWMETER:

Once all of the encodements have been accepted, proceed as follows:

Start spreading and each time the area override sensor is activated (implement sensor) the following warning is displayed:



When this screen is displayed you have the following options:

If the machine is turning at the headland, then continue driving and the warning screen will disappear when spreading starts again.

If you stop spreading temporarily **without** the tank being empty, press **"PAUSE"** to remove the warning. The warning screen will disappear when spreading starts again.

If the tank is empty, press **"TANK EMPTY"**. The following 2 things will happen automatically:

"TANK VOLUME" is transferred to **"TON/M3"** counter. **"TANK VOLUME"** is added to the total counter for consumed amount, which can be found in **"DATA/DELETE"**.

CALCULATING M3/HA OR TON/HA:

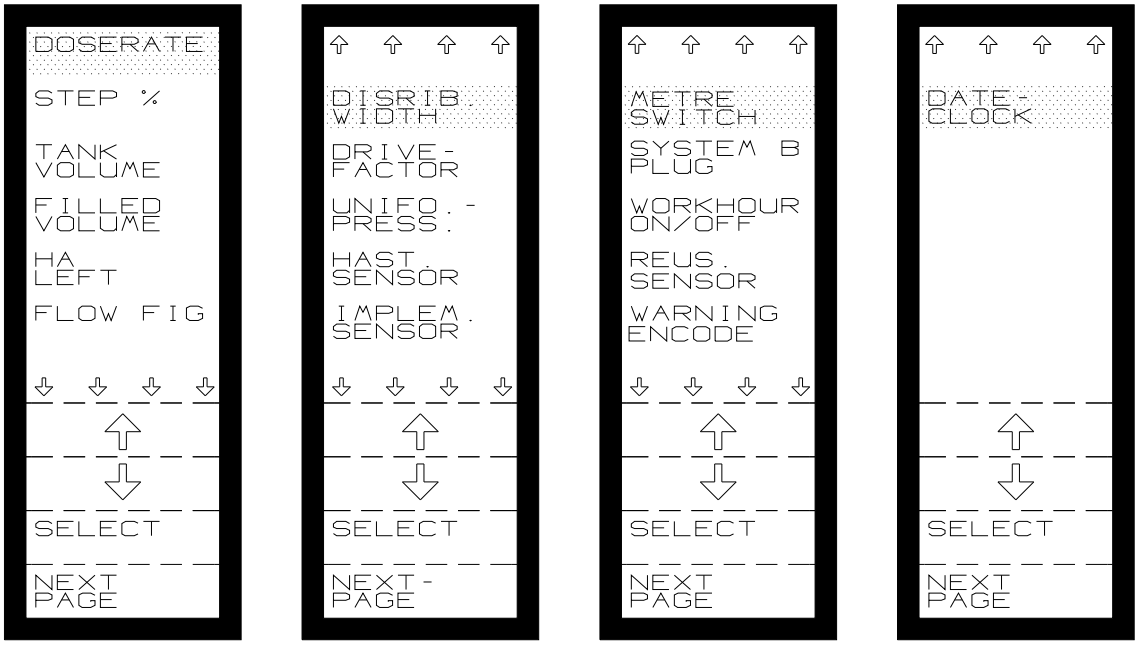
Each time **"EMPTY TANK"** is pressed the TeeJet 5000 calculates the amount spread with this tank-full. This makes it possible to find the correct forward speed/PTO RPM and therefore the application rate for the last 1 – 2 loads.

An accurate calculation demands a constant forward speed and PTO speed and correct encodements.

SLURRY SPREADER ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.



DOSERATE

Encode the required application rate, if automatic application control equipment is fitted, or if a warning is required for incorrect application rate. Encode the required rate in TON or M3 (cubic metres) per hectare. The maximum rate that can be encoded is 99.99, Change between TON and M3 by pressing the **"M3/TON"** key.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

TANK VOLUME

Encode the effective size of the tank here.

Check, if possible, by weighing a few loads to establish the effective **TANK VOLUME**.

FILLED VOLUME

Encode the amount filled into the tank if FX. the tank is only filled half way up. Needs only to be encoded if the amount filled differs from the **TANK VOLUME**.

Remember! Encode the amount filled before leaving encode.

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

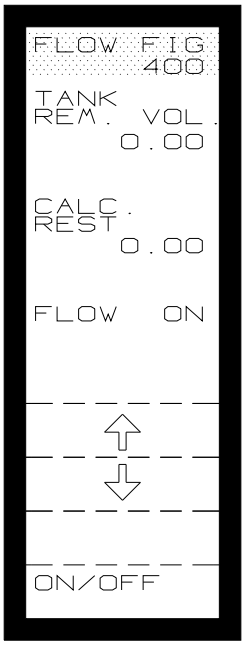
FLOW FIGURE

FLOW ON/OFF:

Without flowmeter: Set flow to **OFF** and the application rate is calculated ***after*** each load.

With flowmeter: Set to **ON** and the flowmeter must be calibrated.

CALIBRATION: **NOTE:** Encode a **"***start value***"** of 500.



Automatic calibration:

1. Fill the slurry spreader to the top, so that you know the exact amount.
2. Encode the amount in **"FILLED VOLUME"**.
3. Empty the tank completely, but be sure to stop emptying as soon as the tank is empty, as air going through the flowmeter **can** cause false readings.
4. Encode **0.00** using the numerical keypad under **"TANK REM. VOL.**
5. Press the flashing **"CALC. FLOW"** key.
6. The flow figure is calculated.

NOTE: Greater accuracy can be achieved by weighing the loads. A new flow figure is calculated each time **"CALC. FLOW"** is pressed.

Manual calibration:

The flow figure can also be calculated manually, as follows:

1. Fill the slurry spreader to the top, so that you know the exact amount
2. Reset the amount counter in **"DATA/DELETE"**.
3. Empty the tank completely.
4. Read the amount in **"DATA/DELETE"**.
5. Place the value in the following formula:

$$\text{NEW FLOW FIGURE} = \frac{\text{Old flow figure x the amount spread}}{\text{The amount read in Data/delete (TeeJet 5000)}}$$

6. Encode this new flow figure using the numerical keypad.

BOOM WIDTH

The working width of the spreader. If the system is fitted with control valves for each section, then the individual section width must be encoded here (left = boom section 1). If the spreader does not have individual sections, then encode the whole spreader width as section 1 (all other sections must be encoded as 0).

DRIVE FACTOR

The speed at which the regulating valve adjusts to maintain the correct application rate. Min. = 1 and Max. = 500. Normal = 25.

If the spreader takes too long to find the required application rate, then the drive factor should be increased.

If the spreader constantly changes from too much to too little, then the drive factor should be reduced.

UNIFORM PRESSURE

If the spreader's distribution head is fitted with uniform pressure valves (return to tank) or not.

ON = YES

OFF = NO

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 slurry spreader program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for slurry spreading.

RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar. Radar and the number of pulses per metre will be displayed at the top of the screen.

IMPORTANT! Working in crops that are blowing in the wind or working in areas with surface water can affect the accuracy of the radar, we recommend using a speed sensor fitted to the tractor under these circumstances.

WHEEL SLURRY SPREADER

If the slurry spreader is fitted with a speed sensor, then press the **"WHEEL SLURRY"** key. The TeeJet 5000 will now use this sensor for forward speed measurement.

Please refer to chapter 2 for forward speed calibration.

IMPLEMENT SENSOR

This sensor starts and stops the area counter. A pressure sensor should be fitted on slurry spreaders between the pump and the distributor/macerator, so that the sensor generates a signal when the pressure drops. If this is the case then **"SLURRY SPREADER"** should be selected.

If a sensor for PTO speed is fitted, then this can be used as an area override sensor (select **PTO**).

METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

SYSTEM B PLUG

There are 2 system plugs on the back of the TeeJet 5000.

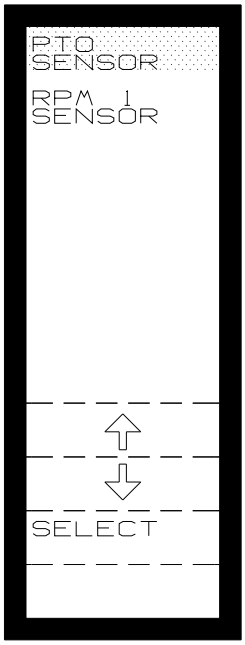
The System **A** plug is compatible with *older* TeeJet 5000 versions.
The System **B** plug is for **new** connections.

ACTIVE 0 VOLT: The individual sections are opened with 0V.
ACTIVE 12 VOLT: The individual sections are opened with 12V.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR



Encode the number of pulses per revolution given for the individual sensors.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

MIS-DOSERATE: Warning **ON/OFF** and max difference in %.

RPM 1: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

Slurry Spreader, Hydraulic control

DOSE RATE 7.21
STEP %: 7.21
TANK VOLUME 7.21
FILLED VOLUME 7.22
HA LEFT 7.22
FLOW FIGURE 7.22
DISTRIBUTOR WIDTH 7.23
DRIVE FACTOR 7.23
RETURN 7.23
FORWARD SPEED SENSOR 7.24
  WHEEL TRACTOR 7.24
  RADAR 7.24
  WHEEL SLURRY SPREADER 7.24
IMPLEMENT SENSOR 7.24
METRE SWITCH 7.25
WORK HOUR ON/OFF 7.25
REVS. SENSOR 7.25
WARNING ENCODE 7.26
DATE - CLOCK: 7.26

INTRODUCTION

The **TeeJet 5000** used to control the amount spread using hydraulic control of a ball valve.

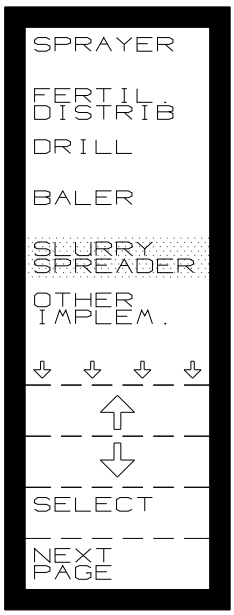
- Maintain the correct application rate regardless of forward speed, plus the ability to alter the application rate in steps depending on the crop's requirement.

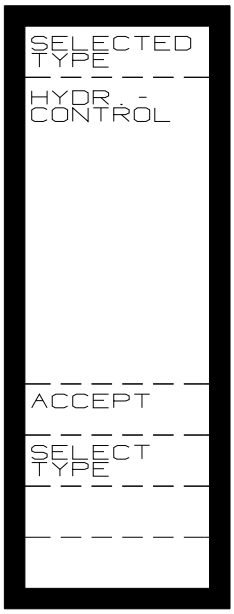
- The **TeeJet 5000** controls the application rate using a proportional valve that adjusts the amount of oil to a hydraulic cylinder, which in turn adjusts the position of a valve.

- Visible and audible warnings given for incorrect rates, forward speed, PTO, tons/m3 left, etc.

NOTE: The computer must be calibrated with the spreader to ensure correct operation.

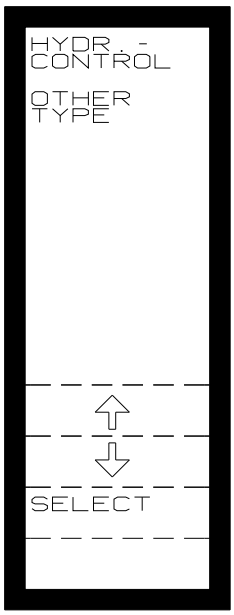
SLURRY SPREADER (HYDRAULIC CONTROL)



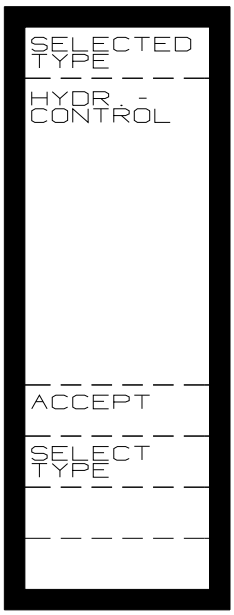


Select slurry spreader from the main menu as follows:

1. Using the arrow keys move the cursor over **"SLURRY SPREADER"**. Press **"SELECT"**.



2. Main menu
   – select slurry spreader



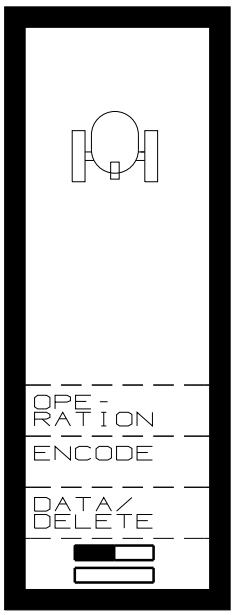
3. Accept the selected type or choose another type.

4. Select type

5. It is now possible to choose between the displayed types.

6. Select the slurry spreader type.

7. Accept



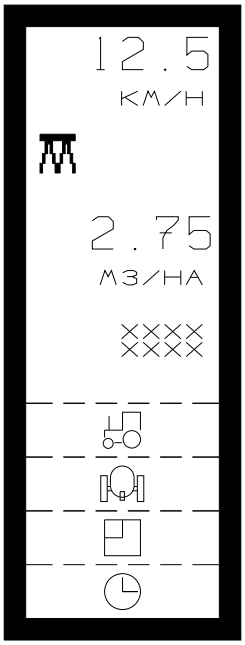
The following is displayed:

It is now possible to choose between the displayed functions:

Each function will be described one by one in the following sections.

The task function is described in section 2 along with all of the other functions that are available in all sections.

SLURRY SPREADER OPERATION



APPLICATION RATE:

The primary function under slurry spreader (hydraulic control) is the application rate in TON/M3 per hectare. This is calculated from the flow through the flowmeter and the area counter (forward speed & working width). This means that to see a reading here the machine must be spreading and driving forward.

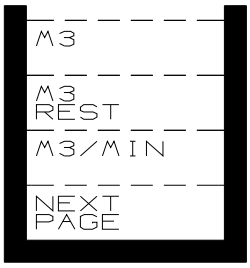
NB: The flowmeter must be calibrated correctly, the wheel circumference and the working width must be correct to ensure correct operation.

FORWARD SPEED:

Forward speed is shown in kilometres per hour with 1 decimal. Forward speed is calculated from pulses from the sensor selected under encode (wheel tractor, wheel slurry spreader or radar).

NB: Remember to reset the counters in **"DATA/DELETE"** before starting.

SLURRY SPREADER FUNCTIONS:



The amounts metered can be displayed in **TON** or **M**^{3} (cubic metre). This can be selected in encode under **"DOSE RATE"**.

TON/M3: Consumption in ton/m^3 slurry.

TON/M3 LEFT: the amount remaining in the tank.

(TON/M3)/MIN: Consumption per minute.

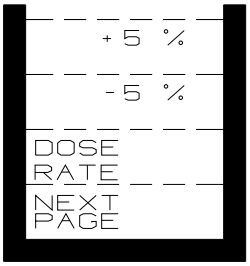
TON/M3: The amount of slurry spread since starting. This function also works as a trip counter and is deleted in **"DATA/DELETE"**, where a total counter can also found (see chapter 2).

TON/M3 LEFT: The amount remaining in the tank. Presupposes correct encodement of the tank size under **TANK VOLUME** in encode. Each time **FULL TANK** is pressed, the amount encoded in **TANK VOLUME** is transferred to **TON/M3 LEFT**, and the slurry spreader is ready for a new load.

This function is also used for calibration of the flowmeter (see page 7.22).

(TON/M3)/MIN: The amount per minute through the flowmeter.

Pressing the **"NEXT PAGE"** key displays the next functions.



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

DOSE RATE NORMAL: Encoding the required application rate or return to normal after using the step key.

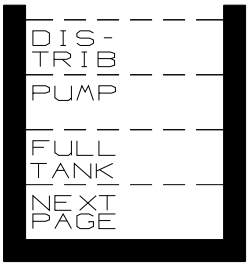
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step feature has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next functions.



DISTRIB: RPM of the distributor.

PUMP: RPM of the pump.

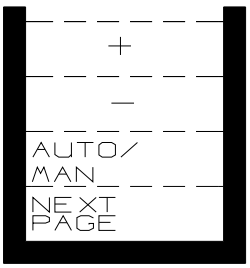
FULL TANK: When the tank is full.

DISTRIBUTOR: The RPM of the distributor is displayed. The number of pulses per revolution is encoded under **REVS. SENSOR** in ENCODE.

PUMP: The RPM of the pump is displayed. The number of pulses per revolution is encoded under **REVS. SENSOR** in ENCODE.

FULL TANK: Pressing this key transfers the amount encoded under **TANK VOLUME** to **TON/M3 LEFT** (presupposes that the amount has been encoded). Use this function each time the tank is refilled.

Pressing the **"NEXT PAGE"** key displays the next functions.



When the **"AUTO/MAN"** key is pressed the following is displayed:

AUTO/MAN: Select between automatic or manual operation.

+: Increased application.

-: Decreased application.

AUTO/MAN: Select between automatic or manual operation. If manual operation is selected, **MAN** will flash in the lower part of the display, **+** and **–** will also appear as function keys.

+: Is only displayed if manual operation is selected.
Increase application. When this key is pressed, the application rate is increased. The speed at which the rate increases depends on the speed of the regulating system.

-: Is only displayed if manual operation is selected.
Decrease application. When this key is pressed, the application rate is decreased. The speed at which the rate decreases depends on the speed of the regulating system.

Pressing the **"NEXT PAGE"** key displays the ***first*** available functions.

MANUAL BOOM SECTION CONTROL:

It is possible to work with up to 9 individual boom sections (presupposes encodement of the sections under DISTRIB. WIDTH in encode).

These boom sections can be opened/closed manually with the numerical keypad. When the numerical key that corresponds to the boom section is pressed for approx. 3 seconds the boom section is opened or closed.

If the spreader has 5 boom sections giving a total working width of 16 metres, the boom sections can be encoded as follows:

Sections 1 and 5 = 50 centimetres
Sections 2 and 4 = 150 centimetres
Section 3 = 1200 centimetres

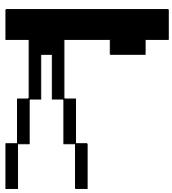
It is now possible to reduce the spreading width from 16M to 15M by closing sections 1 and 5, closing sections 2 and 4 thereafter reduces the working width to 12M.

Which sections are open/closed is displayed on the screen.

BOOM SECTIONS ON/OFF:

Pressing this key starts or stops slurry spreading. Can only be used if **"SLURRY SPREADER"** has been selected as the implement sensor under **"IMPLEM. SENSOR"** in encode.

Also works as the area override sensor.



The picture to the left shows a slurry spreader with 2 boom sections encoded. One section is open and one section is closed. To open the other section, press the number **2** on the numerical keypad for approx. 3 seconds. To close the first section press number **1** on the numerical keypad for approx. 3 seconds.

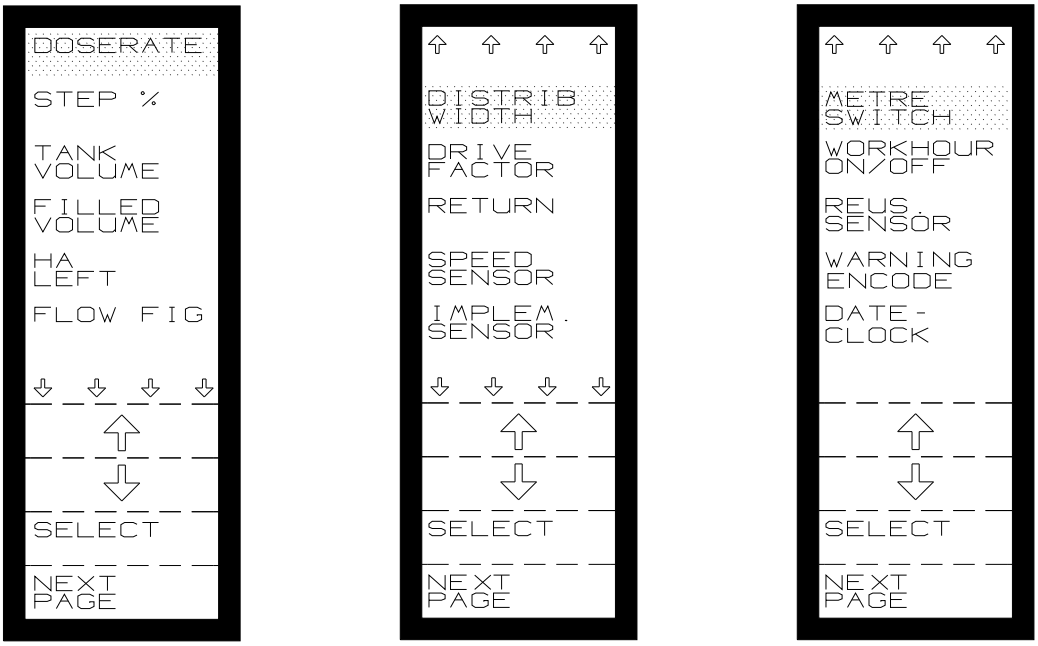
I

When the area override sensor is activated (not counting area) "I" is displayed and all sections will disappear.

SLURRY SPREADER ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.



DOSE RATE

The required application rate is encoded here. Encode the required application rate in TONS or M3 (cubic metres) per hectare. If TON/HA is selected, then the specific gravity of the slurry must also be encoded. Moving the cursor to SPECIFIC GRAVITY and then encoding the value using the numerical keypad does this. The maximum application rate that can be encoded is 99.9. Pressing the **"M3/TON"** key changes between TON or M3.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

TANK VOLUME

Encode the effective tank size here. Used in connection with **"FULL TANK"** in operation.

Check by weighing some loads to get the effective **TANK VOLUME**.

FILLED VOLUME

Encode the amount filled if the tank is only filled, e.g. half way up. Must be encoded when the amount filled differs from the TANK VOLUME. Pressing **"FULL TANK"** automatically transfers the amount encoded under **TANK VOLUME**.

Remember: to encode the amount filled before leaving encode.

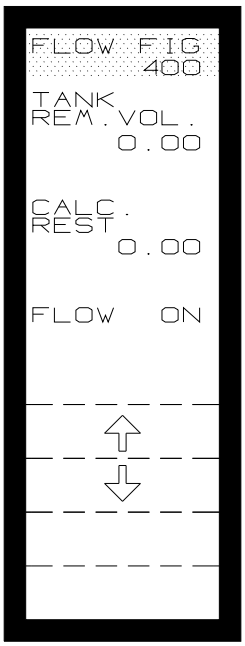
HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

FLOW FIGURE

CALIBRATION:

NOTE: Encode a **"***start value***"** of 1000.



Automatic calibration:

1. Fill the slurry spreader to the top, so that you know the exact amount.
2. Encode the amount in **"FILLED VOLUME"**.
3. Empty the tank completely, but be sure to stop emptying as soon as the tank is empty, as air going through the flowmeter **can** cause false readings.
4. Encode **0.00** using the numerical keypad under **"TANK REM. VOL.**
5. Press the flashing **"CALC. FLOW"** key.
6. The flow figure is calculated.

NOTE: Greater accuracy can be achieved by weighing the loads. A new flow figure is calculated each time **"CALC. FLOW"** is pressed.

Manual calibration:

The flow figure can also be calculated manually, as follows:

1. Fill the slurry spreader to the top, so that you know the exact amount
2. Reset the amount counter in **"DATA/DELETE"**.
3. Empty the tank completely.
4. Read the amount in **"DATA/DELETE"**.
5. Place the value in the following formula:

$$\text{NEW FLOW FIGURE} = \frac{\text{Old flow figure x the amount spread}}{\text{The amount read in Data/delete (TeeJet 5000)}}$$

6. Encode this new flow figure using the numerical keypad.

DISTRIBUTOR WIDTH

The working width of the spreader. The individual section width (boom compensation) must be encoded here (left = boom section 1). If the spreader does not have individual sections, then encode the whole spreader width as section 1 (all other sections must be encoded as 0).

DRIVE FACTOR

DRIVE FACTOR: The speed at which the regulating valve adjusts to maintain the correct application rate.

Min. = 1 and Max. = 500.

Normal = 25.

If the spreader takes too long to find the required application rate, then the drive factor should be increased.

If the spreader constantly changes from too much to too little, then the drive factor should be reduced.

REG. TIME: Encode the number of seconds that the regulating system may move in one direction.
The normal setting is **10**.

RETURN

If the spreader is fitted with a return (return to tank after the flowmeter) or not.

ON = YES

OFF = NO

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 slurry spreader program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for slurry spreading.

RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar. Radar and the number of pulses per metre will be displayed at the top of the screen.

IMPORTANT! Working in crops that are blowing in the wind or working in areas with surface water can affect the accuracy of the radar, we recommend using a speed sensor fitted to the tractor under these circumstances.

WHEEL SLURRY SPREADER

If the slurry spreader is fitted with a speed sensor, then press the **"WHEEL SLURRY"** key. The TeeJet 5000 will now use this sensor for forward speed measurement.

Please refer to chapter 2 for forward speed calibration

IMPLEMENT SENSOR

SLURRY SPREADER: Area measurement is started/stopped by pressing the HOLD key (see SLURRY SPREADER OPERATION).

PTO: Area measurement is started/stopped by a sensor fitted to the PTO shaft (area measurement is stopped when the RPM is lower than 50).

RPM PUMP: Area measurement is started/stopped by a RPM sensor fitted to the pump (area measurement is stopped when the RPM is lower than 50).

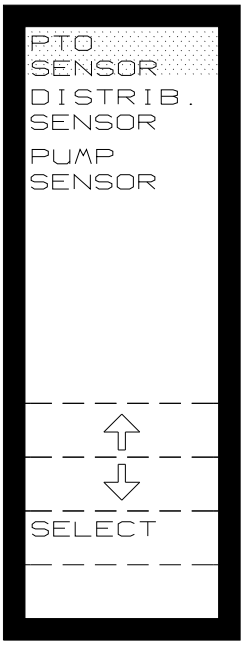
METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR



Encode the number of pulses per revolution given for the individual sensors.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

MIS-DOSERATE: Warning **ON/OFF** and max difference in %.

RPM DISTRIBUTOR: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.

RPM PUMP: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

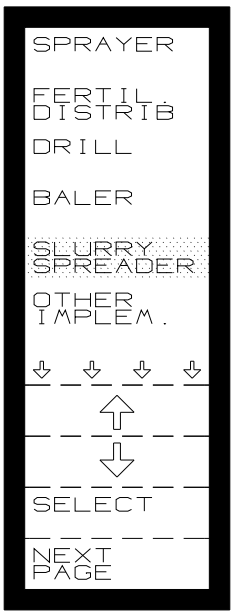
Set the date and time in this menu:

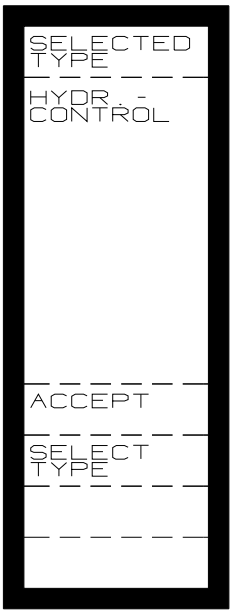
HOURS - MINUTES - YEAR - MONTH - DAY.

Slurry spreader, Horsch

SLURRY SPREADER (HORSCH) 7.28
SLURRY SPREADER OPERATION (HORSCH) 7.29
SLURRY SPREADER FUNCTIONS: WITH FLOW METERING 7.29
SLURRY SPREADER: WITHOUT FLOWMETER 7.31
SLURRY SPREADER ENCODE 7.33
- DOSERATE 7.33
- STEP %: 7.33
- TANK VOLUME 7.34
- FILLED VOLUME 7.34
- HA LEFT 7.34
- FLOW FIGURE 7.34
- BOOM WIDTH 7.35
- UNIFORM PRESSURE 7.35
- FORWARD SPEED SENSOR 7.36
  - WHEEL TRACTOR 7.36
  - RADAR 7.36
  - WHEEL SLURRY SPREADER 7.36
- IMPLEMENT SENSOR 7.36
- METRE SWITCH 7.36
- WORK HOUR ON/OFF 7.36
- REVS. SENSOR 7.37
- SYSTEM B PLUG 7.37
- FILL MENU 7.38
- REG. BREAK 7.38
- PWM 7.39
- PROPORTIONAL VAVE 7.40
- WARNING ENCODE 7.40
- DATE - CLOCK: 7.40

SLURRY SPREADER (HORSCH)



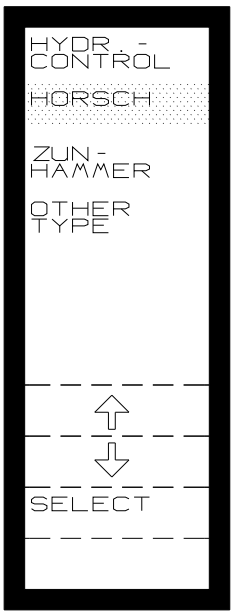


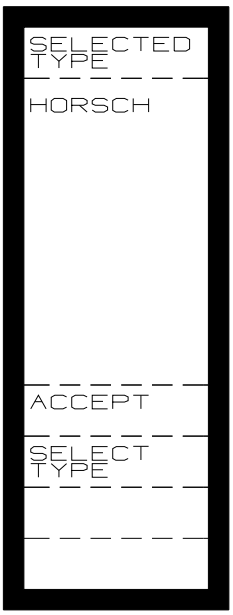
Select slurry spreader from the main menu as follows:

1. Using the arrow keys move the cursor over **"SLURRY SPREADER"**. Press **"SELECT"**.

2. Main menu
   - select slurry spreader

3. Accept the selected type or choose another type.



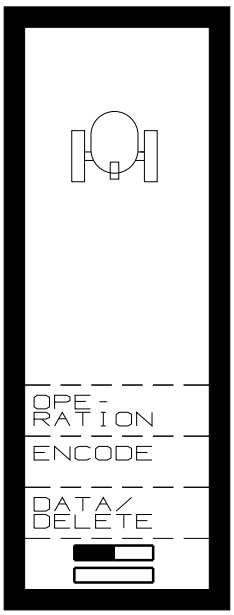


4. Select type

5. It is now possible to choose between the displayed types.

6. Select the slurry spreader type.

7. Accept



It is now possible to select between the following functions:

OPERATION

ENCODE

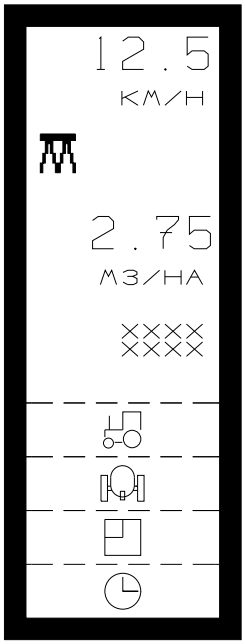
DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

SLURRY SPREADER OPERATION (HORSCH)

Before the slurry spreader is used a PWM calibration of the proportional valve MUST be carried out. This PWM calibration is normally carried out by the engineer when fitting the system to the slurry spreader. The procedure for this calibration is described in the PWM section under ENCODE.



APPLICATION RATE:

The primary function for slurry spreaders is application rate. The application rate is displayed in TON/M3 per hectare. This rate is calculated from the flow through the flowmeter and area measurement (forward speed and working width). It is therefore necessary to both drive and spread to see this function.

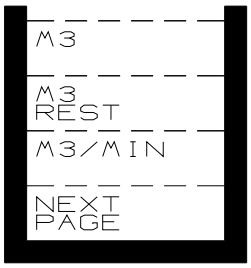
NOTE: To ensure correct operation the flowmeter must be calibrated, the correct wheel circumference and the correct working width must be encoded.

FORWARD SPEED:

Forward speed is displayed in kilometres per hour with 1 decimal. Forward speed is calculated using the sensor selected under encode (wheel tractor, wheel spreader or radar).

NOTE: Remember to reset all counters in **"DATA/DELETE"** before starting.

SLURRY SPREADER FUNCTIONS: WITH FLOW METERING



The metered amount can be displayed in either **TON** or **M3** (cubic metres). These options are selected in encode under **"DOSERATE"**.

TON/M3: Slurry consumption in ton or M3.

TON/M3 REST: The amount left in the tank.

(TON/M3)/MIN: Consumption per minute.

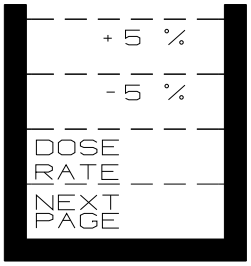
TON/M3: The amount of slurry spread since starting. This function works as a trip counter, and can be deleted in **"DATA/DELETE"**. The total counter is also found here.

TON/M3 REST: The amount remaining in the tank. This function presupposes encodement of the tank size **"TANK VOLUME"** in encode. Every time **"TANK EMPTY"** is pressed, the tank size is transferred to **"TON/M3 REST"** and the slurry spreader is ready to fill and spread again.

This function is also used in conjunction with flowmeter calibration (see page number 7.34)

(TON/M3)/MIN: The amount of slurry per minute going through the flowmeter.

Pressing **"NEXT PAGE"** displays the next possible functions.



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

NORMAL: Return to the required normal application rate.

DOSE RATE: Encoding the required application rate.

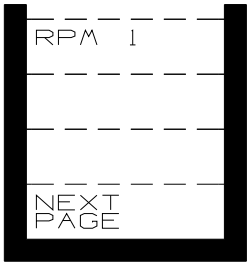
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step feature has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next functions.

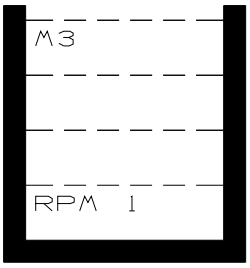


RPM 1: Revolutions per minute.

RPM 1: The shaft speed of an axle is displayed here. Normally the RPM of the distributor/macerator.

Pressing the **"NEXT PAGE"** key displays the first set of functions.

SLURRY SPREADER: WITHOUT FLOWMETER



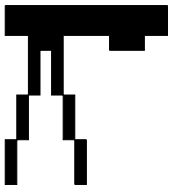
TON/M3: Slurry consumption in ton/m3.

RPM 1: Revolutions per minute.

TON/M3: The amount of slurry spread since starting. This function works as a trip counter, and can be deleted in **"DATA/DELETE"**. The total counter is also found here.

RPM 1: The shaft speed of an axle is displayed here. Normally the RPM of the distributor/macerator.

BOOM SECTIONS ON/OFF:



The picture shows that the spreader has 2 sections and only one is open. The total number of sections must be encoded in **"DISTRIB. WIDTH"**.

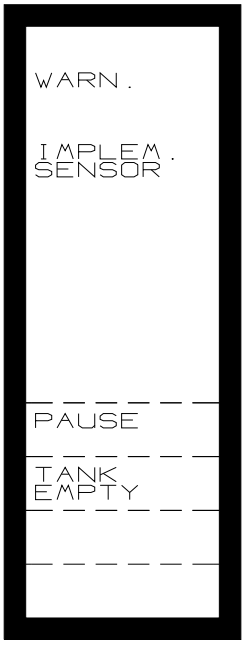
I

When the override sensor is activated (not measuring area "**I**" is displayed.

DAILY USE OF THE SLURRY PROGRAM *WITH* A FLOWMETER

Once all of the encodements have been accepted, proceed as follows:

Start spreading and each time the area override sensor is activated (implement sensor) the following warning is displayed:



When this screen is displayed you have the following options:

If the machine is turning at the headland, then continue driving and the warning screen will disappear when spreading starts again.

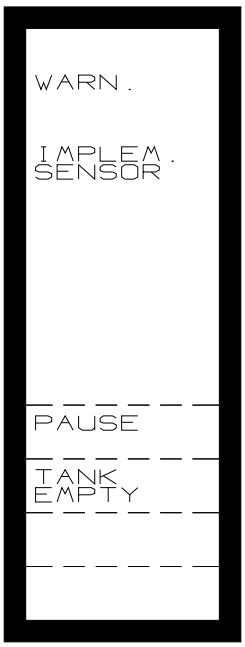
If you stop spreading temporarily **without** the tank being empty, press **"PAUSE"** to remove the warning. The warning screen will disappear when spreading starts again.

If the tank is empty, press **"TANK EMPTY"**. The value encoded under **"TANK VOLUME"** will be automatically transferred to **"TON/M3 LEFT"**.

DAILY USE OF THE SLURRY PROGRAM *WITHOUT* A FLOWMETER:

Once all of the encodements have been accepted, proceed as follows:

Start spreading and each time the area override sensor is activated (implement sensor) the following warning is displayed:



When this screen is displayed you have the following options:

If the machine is turning at the headland, then continue driving and the warning screen will disappear when spreading starts again.

If you stop spreading temporarily **without** the tank being empty, press **"PAUSE"** to remove the warning. The warning screen will disappear when spreading starts again.

If the tank is empty, press **"TANK EMPTY"**. The following 2 things will happen automatically:

"TANK VOLUME" is transferred to **"TON/M3"** counter. **"TANK VOLUME"** is added to the total counter for consumed amount, which can be found in **"DATA/DELETE"**.

CALCULATING M3/HA OR TON/HA:

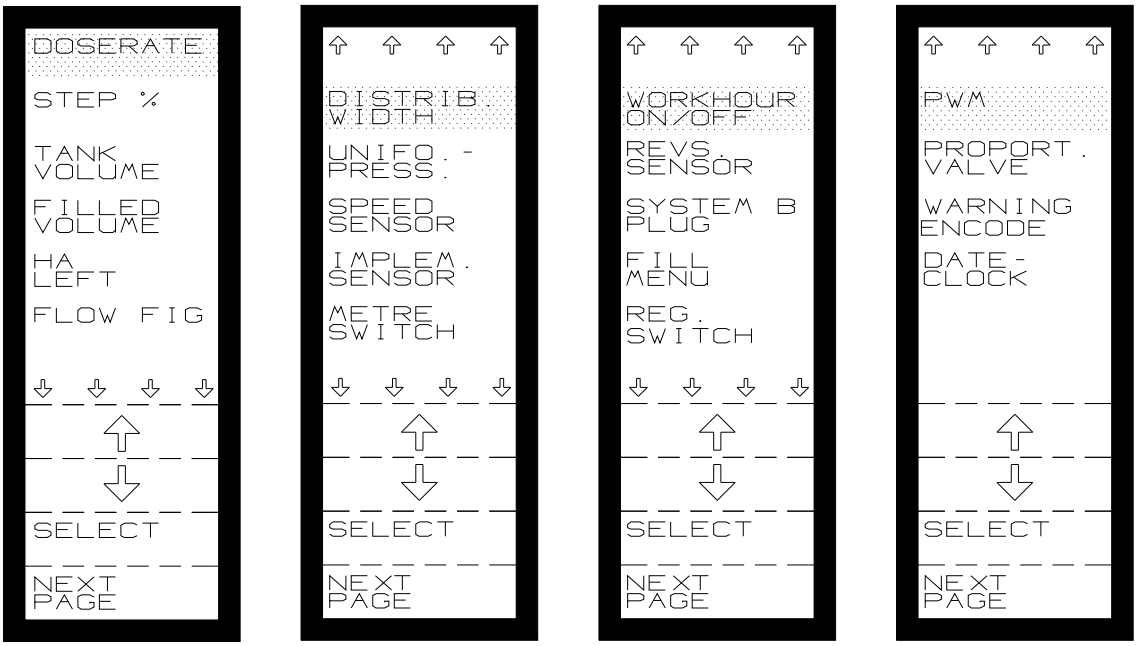
Each time **"EMPTY TANK"** is pressed the TeeJet 5000 calculates the amount spread with this tank-full. This makes it possible to find the correct forward speed/PTO RPM and therefore the application rate for the last 1 – 2 loads.

An accurate calculation demands a constant forward speed and PTO speed and correct encodements.

SLURRY SPREADER ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.



DOSERATE

Encode the required application rate, if automatic application control equipment is fitted, or if a warning is required for incorrect application rate. Encode the required rate in TON or M3 (cubic metres) per hectare. The maximum rate that can be encoded is 99.99, Change between TON and M3 by pressing the **"M3/TON"** key.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

TANK VOLUME

Encode the effective size of the tank here.

Check, if possible, by weighing a few loads to establish the effective **TANK VOLUME**.

FILLED VOLUME

Encode the amount filled into the tank if FX. the tank is only filled half way up. Needs only to be encoded if the amount filled differs from the **TANK VOLUME**.

Remember! Encode the amount filled before leaving encode.

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

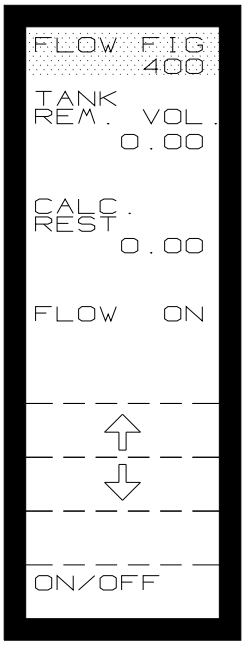
FLOW FIGURE

FLOW ON/OFF:

Without flowmeter: Set flow to **OFF** and the application rate is calculated ***after*** each load.

With flowmeter: Set to **ON** and the flowmeter must be calibrated.

CALIBRATION: **NOTE:** Encode a **"***start value***"** of 500.



Automatic calibration:

1. Fill the slurry spreader to the top, so that you know the exact amount.
2. Encode the amount in **"FILLED VOLUME"**.
3. Empty the tank completely, but be sure to stop emptying as soon as the tank is empty, as air going through the flowmeter **can** cause false readings.
4. Encode **0.00** using the numerical keypad under **"TANK REM. VOL.**
5. Press the flashing **"CALC. FLOW"** key.
6. The flow figure is calculated.

NOTE: Greater accuracy can be achieved by weighing the loads. A new flow figure is calculated each time **"CALC. FLOW"** is pressed.

Manual calibration:

The flow figure can also be calculated manually, as follows:

1. Fill the slurry spreader to the top, so that you know the exact amount
2. Reset the amount counter in **"DATA/DELETE"**.
3. Empty the tank completely.
4. Read the amount in **"DATA/DELETE"**.
5. Place the value in the following formula:

$$\text{NEW FLOW FIGURE} = \frac{\text{Old flow figure x the amount spread}}{\text{The amount read in Data/delete (TeeJet 5000)}}$$

6. Encode this new flow figure using the numerical keypad.

BOOM WIDTH

The working width of the spreader. If the system is fitted with control valves for each section, then the individual section width must be encoded here (left = boom section 1). If the spreader does not have individual sections, then encode the whole spreader width as section 1 (all other sections must be encoded as 0).

UNIFORM PRESSURE

If the spreader's distribution head is fitted with uniform pressure valves (return to tank) or not.

ON = YES

OFF = NO

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 slurry spreader program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for slurry spreading.

RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar. Radar and the number of pulses per metre will be displayed at the top of the screen.

IMPORTANT! Working in crops that are blowing in the wind or working in areas with surface water can affect the accuracy of the radar, we recommend using a speed sensor fitted to the tractor under these circumstances.

WHEEL SLURRY SPREADER

If the slurry spreader is fitted with a speed sensor, then press the **"WHEEL SLURRY"** key. The TeeJet 5000 will now use this sensor for forward speed measurement.

Please refer to chapter 2 for forward speed calibration.

IMPLEMENT SENSOR

This sensor starts and stops the area counter. A pressure sensor should be fitted on slurry spreaders between the pump and the distributor/macerator, so that the sensor generates a signal when the pressure drops. If this is the case then **"SLURRY SPREADER"** should be selected.

If a sensor for PTO speed is fitted, then this can be used as an area override sensor (select **PTO**).

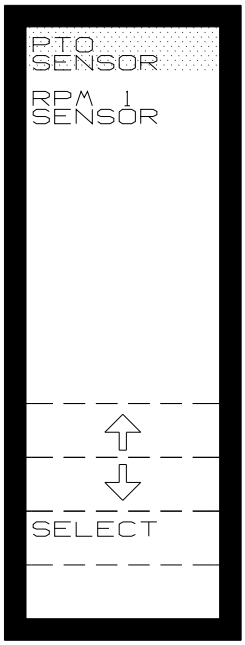
METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR



Encode the number of pulses per revolution given for the individual sensors.

SYSTEM B PLUG

There are 2 system plugs on the back of the TeeJet 5000.

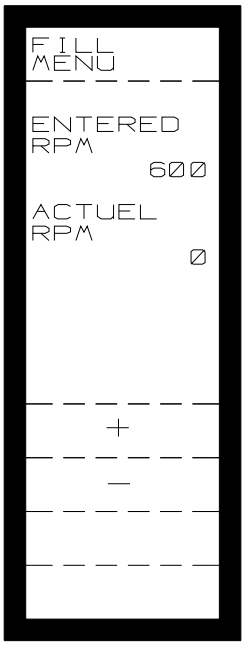
The System **A** plug is compatible with *older* TeeJet 5000 versions.
The System **B** plug is for **new** connections.

ACTIVE 0 VOLT: The individual sections are opened with 0V.
ACTIVE 12 VOLT: The individual sections are opened with 12V.

FILL MENU

Before the slurry spreader is used a PWM calibration of the proportional valve MUST be carried out. This PWM calibration is normally carried out by the engineer when fitting the system to the slurry spreader. The procedure for this calibration is described in the PWM section under ENCODE.

It is possible to use a fixed displacement pump for filling the slurry spreader. When the fill signal and the implement signals are active the pump will run at a pre-encoded speed.



1. Set the spreader to fill.
2. Press the ”**+**” and ”**-**” keys to adjust the required pump speed.
3. The pump speed will change and the actual RPM is displayed.
4. When the required pump speed has been reached press the ”**RETURN**” key.

REG. BREAK

This menu allows for selection between regulation stop ACTIVE or regulation stop INACTIVE by the implement sensor.

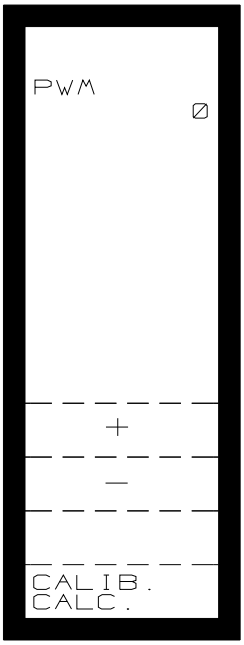
If INACTIVE is selected, the slurry will run via the return to the tank, but the pump will still regulate. When spreading recommences the application rate will be correct, as the pump was regulating whilst the implement sensor was activ, i.e. turning.

If INACTIVE is selected, the pump must alter speed (application rate) from 0 each time the implement sensor has been activated. The pump will not regulate whilst turning.

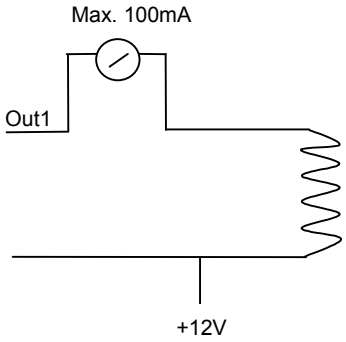
PWM

Calibrating the proportional valve is necessary to protect the proportional valve against too much power. This calibration is normally carried out by the engineer during fitting the equipment on the slurry spreader. The procedure is, however, described below.

It is not recommended to carry out this calibration procedure without competent knowledge of power measuring. The procedure is thus:



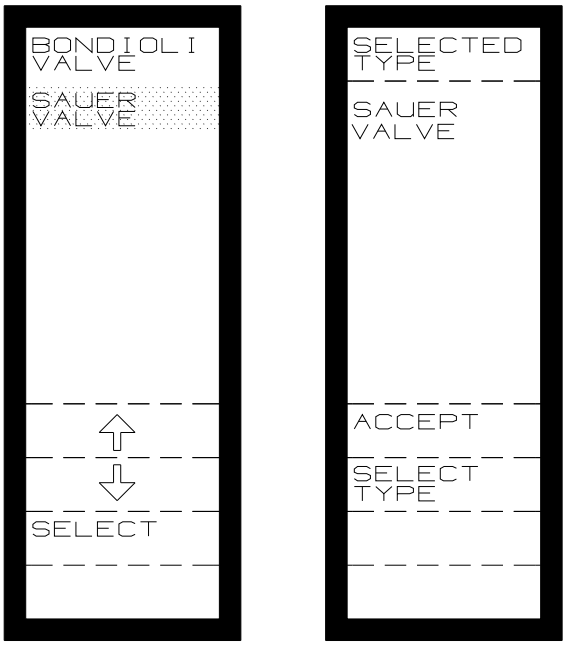
1. Connect a meter in series between TeeJet 5000 OUT1 output.



2. Pressing the **"+"** and **"-"** keys alters the PWM value and the power can be measured on the meter.
3. When the power is 100 mA. (Must ***not*** exceed 100 mA) press "**CALIB. CALC.**" and the procedure is finished.
4. The PWM value will be the highest value that can be reached by regulation.

PROPORTIONAL VAVE

Select which porportional valve is fitted on the system in this menu.



1. Select type
2. It is now possible to select between the shown valve types.
3. Select valve.
4. Accept.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

MIS-DOSERATE: Warning **ON/OFF** and max difference in %.

RPM 1: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

Slurry spreader, Zunhammer

SLURRY SPREADER (ZUNHAMMER) 7.42
SLURRY SPREADER OPERATION (ZUNHAMMER) 7.43
SLURRY SPREADER FUNCTIONS: WITH FLOW METERING 7.43
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HA LEFT 7.48
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UNIFORM PRESSURE 7.49
FORWARD SPEED SENSOR 7.50
WHEEL TRACTOR 7.50
RADAR 7.50
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FILL MENU 7.51
PWM 7.52
PROPORTIONAL VAVE 7.53
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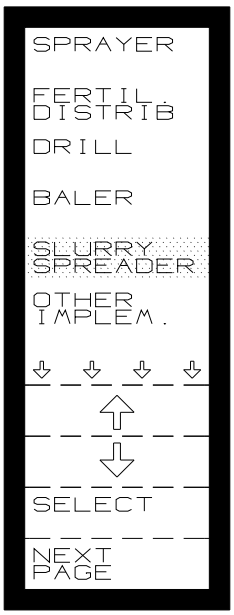
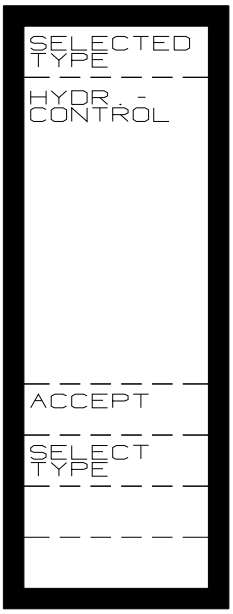
SLURRY SPREADER (ZUNHAMMER)



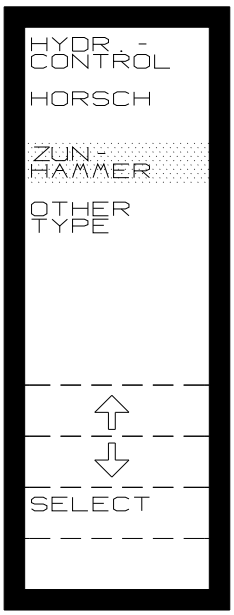


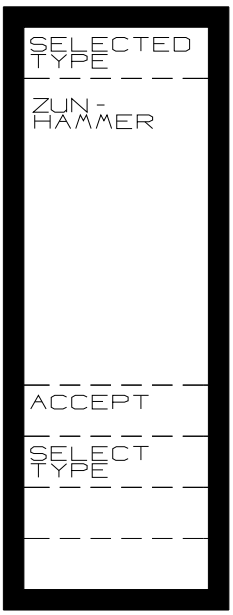
Select slurry spreader from the main menu as follows:

1. Using the arrow keys move the cursor over **"SLURRY SPREADER"**. Press **"SELECT"**.

2. Main menu
   - select slurry spreader

3. Accept the selected type or choose another type.



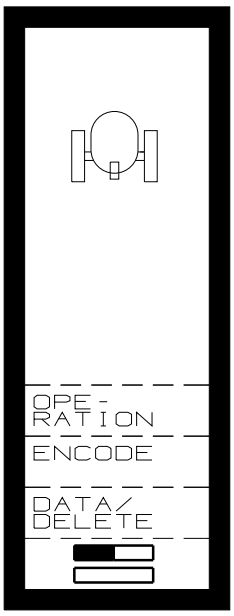


4. Select type

5. It is now possible to choose between the displayed types.

6. Select the slurry spreader type.

7. Accept



It is now possible to select between the following functions:

OPERATION

ENCODE

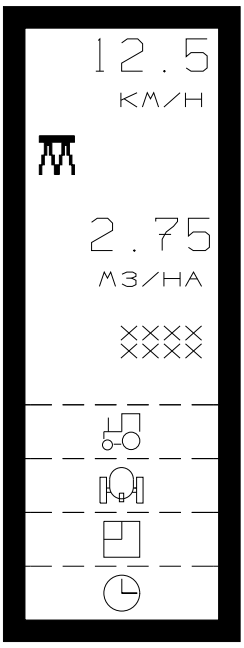
DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

SLURRY SPREADER OPERATION (ZUNHAMMER)

Before the slurry spreader is used a PWM calibration of the proportional valve MUST be carried out. This PWM calibration is normally carried out by the engineer when fitting the system to the slurry spreader. The procedure for this calibration is described in the PWM section under ENCODE.



APPLICATION RATE:

The primary function for slurry spreaders is application rate. The application rate is displayed in TON/M3 per hectare. This rate is calculated from the flow through the flowmeter and area measurement (forward speed and working width). It is therefore necessary to both drive and spread to see this function.

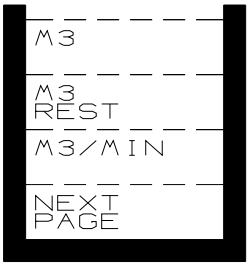
NOTE: To ensure correct operation the flowmeter must be calibrated, the correct wheel circumference and the correct working width must be encoded.

FORWARD SPEED:

Forward speed is displayed in kilometres per hour with 1 decimal. Forward speed is calculated using the sensor selected under encode (wheel tractor, wheel spreader or radar).

NOTE: Remember to reset all counters in **"DATA/DELETE"** before starting.

SLURRY SPREADER FUNCTIONS: WITH FLOW METERING



The metered amount can be displayed in either **TON** or **M3** (cubic metres). These options are selected in encode under **"DOSERATE"**.

TON/M3: Slurry consumption in ton or M3.

TON/M3 REST: The amount left in the tank.

(TON/M3)/MIN: Consumption per minute.

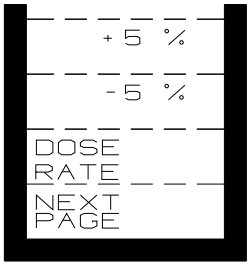
TON/M3: The amount of slurry spread since starting. This function works as a trip counter, and can be deleted in **"DATA/DELETE"**. The total counter is also found here.

TON/M3 REST: The amount remaining in the tank. This function presupposes encodement of the tank size **"TANK VOLUME"** in encode. Every time **"TANK EMPTY"** is pressed, the tank size is transferred to **"TON/M3 REST"** and the slurry spreader is ready to fill and spread again.

This function is also used in conjunction with flowmeter calibration (see page number 7.48)

(TON/M3)/MIN: The amount of slurry per minute going through the flowmeter.

Pressing **"NEXT PAGE"** displays the next possible functions.



+XX%: Step dosage, increase.

-XX%: Step dosage, decrease.

NORMAL: Return to the required normal application rate.

DOSE RATE: Encoding the required application rate.

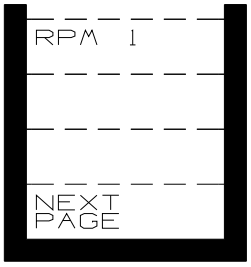
+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile reduction of the encoded application rate. The size of the steps is altered in encode.

NORMAL: (Only displayed if the step feature has been used)
Normal application rate. Regardless of how many steps the application rate has been increased/decreased by, pressing this key will return the application rate to normal.

DOSE RATE: Pressing this key allows the application rate to be altered directly from the operation screen (see also DOSE RATE in encode).

Pressing the **"NEXT PAGE"** key displays the next functions.

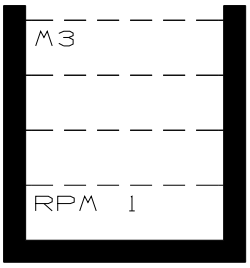


RPM 1: Revolutions per minute.

RPM 1: The shaft speed of an axle is displayed here. Normally the RPM of the distributor/macerator.

Pressing the **"NEXT PAGE"** key displays the first set of functions.

SLURRY SPREADER: WITHOUT FLOWMETER



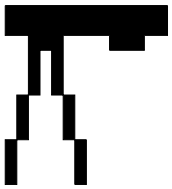
TON/M3: Slurry consumption in ton/m3.

RPM 1: Revolutions per minute.

TON/M3: The amount of slurry spread since starting. This function works as a trip counter, and can be deleted in **"DATA/DELETE"**. The total counter is also found here.

RPM 1: The shaft speed of an axle is displayed here. Normally the RPM of the distributor/macerator.

BOOM SECTIONS ON/OFF:



The picture shows that the spreader has 2 sections and only one is open. The total number of sections must be encoded in **"DISTRIB. WIDTH"**.

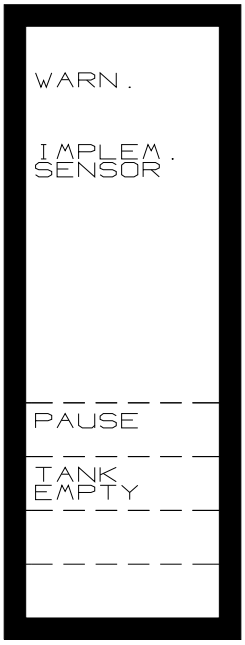
I

When the override sensor is activated (not measuring area "**I**" is displayed.

DAILY USE OF THE SLURRY PROGRAM *WITH* A FLOWMETER

Once all of the encodements have been accepted, proceed as follows:

Start spreading and each time the area override sensor is activated (implement sensor) the following warning is displayed:



When this screen is displayed you have the following options:

If the machine is turning at the headland, then continue driving and the warning screen will disappear when spreading starts again.

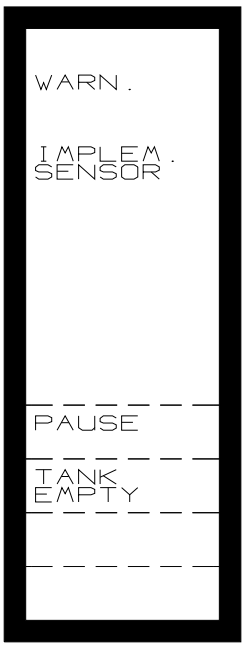
If you stop spreading temporarily **without** the tank being empty, press **"PAUSE"** to remove the warning. The warning screen will disappear when spreading starts again.

If the tank is empty, press **"TANK EMPTY"**. The value encoded under **"TANK VOLUME"** will be automatically transferred to **"TON/M3 LEFT"**.

DAILY USE OF THE SLURRY PROGRAM *WITHOUT* A FLOWMETER:

Once all of the encodements have been accepted, proceed as follows:

Start spreading and each time the area override sensor is activated (implement sensor) the following warning is displayed:



When this screen is displayed you have the following options:

If the machine is turning at the headland, then continue driving and the warning screen will disappear when spreading starts again.

If you stop spreading temporarily **without** the tank being empty, press **"PAUSE"** to remove the warning. The warning screen will disappear when spreading starts again.

If the tank is empty, press **"TANK EMPTY"**. The following 2 things will happen automatically:

"TANK VOLUME" is transferred to **"TON/M3"** counter. **"TANK VOLUME"** is added to the total counter for consumed amount, which can be found in **"DATA/DELETE"**.

CALCULATING M3/HA OR TON/HA:

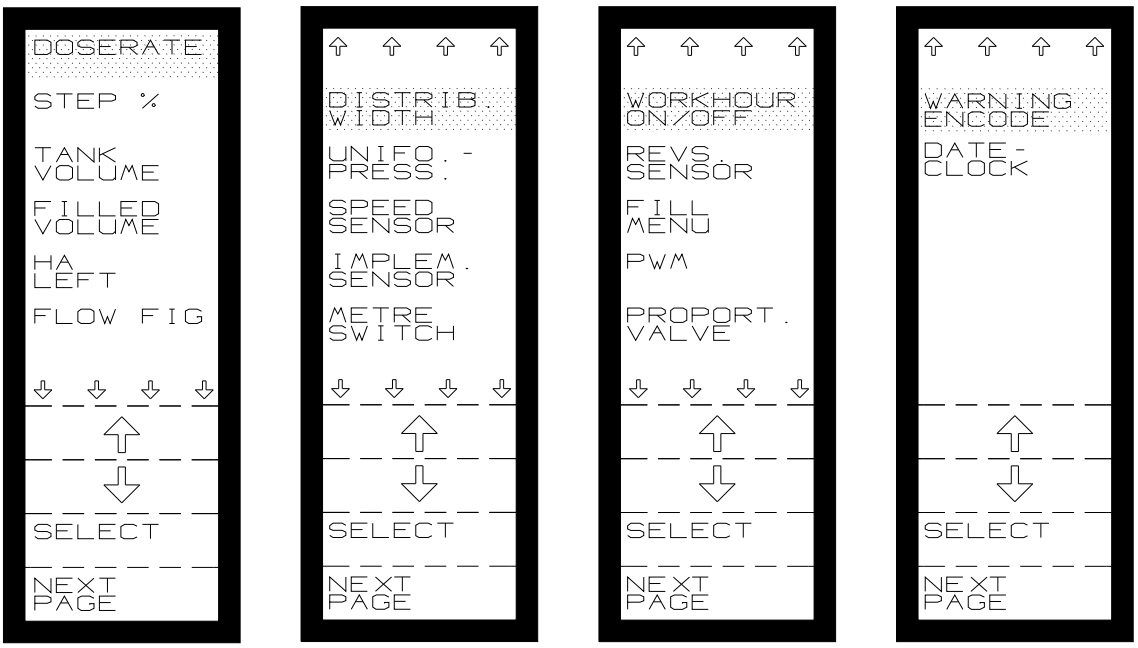
Each time **"EMPTY TANK"** is pressed the TeeJet 5000 calculates the amount spread with this tank-full. This makes it possible to find the correct forward speed/PTO RPM and therefore the application rate for the last 1 – 2 loads.

An accurate calculation demands a constant forward speed and PTO speed and correct encodements.

SLURRY SPREADER ENCODE

This menu allows the operator to encode the various settings that are necessary for spreading. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.



DOSERATE

Encode the required application rate, if automatic application control equipment is fitted, or if a warning is required for incorrect application rate. Encode the required rate in TON or M3 (cubic metres) per hectare. The maximum rate that can be encoded is 99.99, Change between TON and M3 by pressing the **"M3/TON"** key.

STEP %:

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

TANK VOLUME

Encode the effective size of the tank here.

Check, if possible, by weighing a few loads to establish the effective **TANK VOLUME**.

FILLED VOLUME

Encode the amount filled into the tank if FX. the tank is only filled half way up. Needs only to be encoded if the amount filled differs from the **TANK VOLUME**.

Remember! Encode the amount filled before leaving encode.

HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

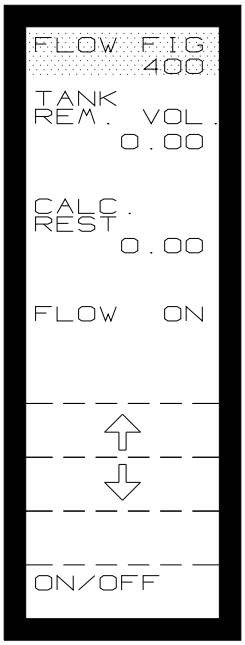
FLOW FIGURE

FLOW ON/OFF:

Without flowmeter: Set flow to **OFF** and the application rate is calculated ***after*** each load.

With flowmeter: Set to **ON** and the flowmeter must be calibrated.

CALIBRATION: **NOTE:** Encode a **"***start value***"** of 500.



Automatic calibration:

1. Fill the slurry spreader to the top, so that you know the exact amount.
2. Encode the amount in **"FILLED VOLUME"**.
3. Empty the tank completely, but be sure to stop emptying as soon as the tank is empty, as air going through the flowmeter **can** cause false readings.
4. Encode **0.00** using the numerical keypad under **"TANK REM. VOL.**
5. Press the flashing **"CALC. FLOW"** key.
6. The flow figure is calculated.

NOTE: Greater accuracy can be achieved by weighing the loads. A new flow figure is calculated each time **"CALC. FLOW"** is pressed.

Manual calibration:

The flow figure can also be calculated manually, as follows:

1. Fill the slurry spreader to the top, so that you know the exact amount
2. Reset the amount counter in **"DATA/DELETE"**.
3. Empty the tank completely.
4. Read the amount in **"DATA/DELETE"**.
5. Place the value in the following formula:

$$\text{NEW FLOW FIGURE} = \frac{\text{Old flow figure x the amount spread}}{\text{The amount read in Data/delete (TeeJet 5000)}}$$

6. Encode this new flow figure using the numerical keypad.

BOOM WIDTH

The working width of the spreader. If the system is fitted with control valves for each section, then the individual section width must be encoded here (left = boom section 1). If the spreader does not have individual sections, then encode the whole spreader width as section 1 (all other sections must be encoded as 0).

UNIFORM PRESSURE

If the spreader's distribution head is fitted with uniform pressure valves (return to tank) or not.

ON = YES

OFF = NO

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 slurry spreader program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used for slurry spreading.

RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar. Radar and the number of pulses per metre will be displayed at the top of the screen.

IMPORTANT! Working in crops that are blowing in the wind or working in areas with surface water can affect the accuracy of the radar, we recommend using a speed sensor fitted to the tractor under these circumstances.

WHEEL SLURRY SPREADER

If the slurry spreader is fitted with a speed sensor, then press the **"WHEEL SLURRY"** key. The TeeJet 5000 will now use this sensor for forward speed measurement.

Please refer to chapter 2 for forward speed calibration.

IMPLEMENT SENSOR

This sensor starts and stops the area counter. A pressure sensor should be fitted on slurry spreaders between the pump and the distributor/macerator, so that the sensor generates a signal when the pressure drops. If this is the case then **"SLURRY SPREADER"** should be selected.

If a sensor for PTO speed is fitted, then this can be used as an area override sensor (select **PTO**).

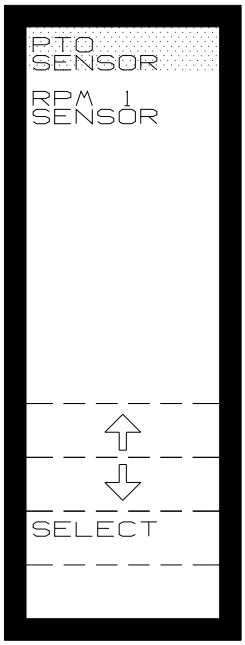
METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

REVS. SENSOR

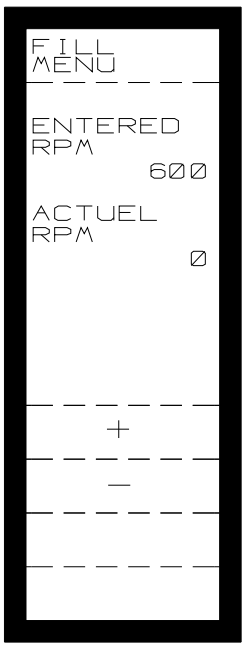


Encode the number of pulses per revolution given for the individual sensors.

FILL MENU

Before the slurry spreader is used a PWM calibration of the proportional valve MUST be carried out. This PWM calibration is normally carried out by the engineer when fitting the system to the slurry spreader. The procedure for this calibration is described in the PWM section under ENCODE.

It is possible to use a fixed displacement pump for filling the slurry spreader. When the fill signal and the implement signals are active the pump will run at a pre-encoded speed.

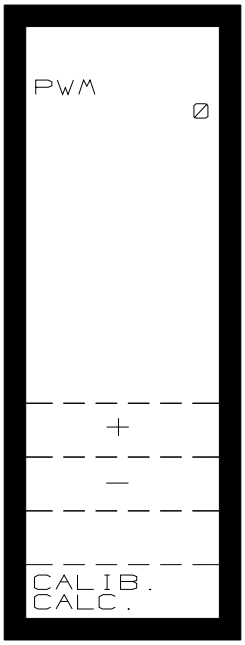


1. Set the spreader to fill.
2. Press the ”**+**” and ”**-**” keys to adjust the required pump speed.
3. The pump speed will change and the actual RPM is displayed.
4. When the required pump speed has been reached press the ”**RETURN**” key.

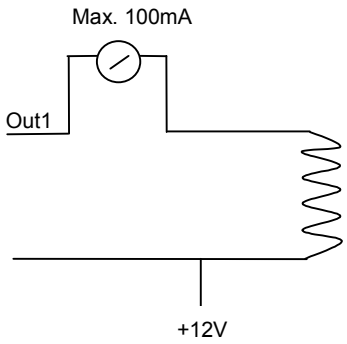
PWM

Calibrating the proportional valve is necessary to protect the proportional valve against too much power. This calibration is normally carried out by the engineer during fitting the equipment on the slurry spreader. The procedure is, however, described below.

It is not recommended to carry out this calibration procedure without competent knowledge of power measuring. The procedure is thus:



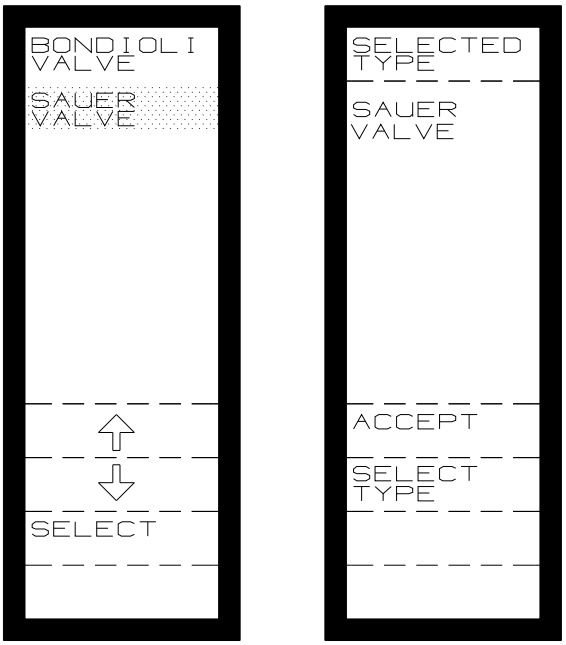
1. Connect a meter in series between TeeJet 5000 OUT1 output.



2. Pressing the **"+"** and **"-"** keys alters the PWM value and the power can be measured on the meter.
3. When the power is 100 mA. (Must ***not*** exceed 100 mA) press "**CALIB. CALC.**" and the procedure is finished.
4. The PWM value will be the highest value that can be reached by regulation.

PROPORTIONAL VAVE

Select which porportional valve is fitted on the system in this menu.



1. Select type
2. It is now possible to select between the shown valve types.
3. Select valve.
4. Accept.

WARNING ENCODE

The following warnings can be set in this menu:

It is recommended to turn all warnings, which are not wanted “OFF”.

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.

RPM: Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.

RPM 1: Warning **ON/OFF** and **MAX/MIN**-limits for shaft speed. Encode in RPM.

PLC: Warning **ON/OFF** for PLC warnings.

There are 4 PLC warnings given for the following:

No slurry flow

High pressure

Tank valve closed

Fill pipe in

NB: The encoded limits must exceed the limits encoded. If a warning is required when an axle stops (0 RPM) then set the minimum limit to 1.

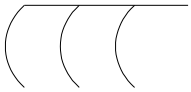
Besides these warnings an automatic rate warning is given if the application rate varies from the encoded by 20%.

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

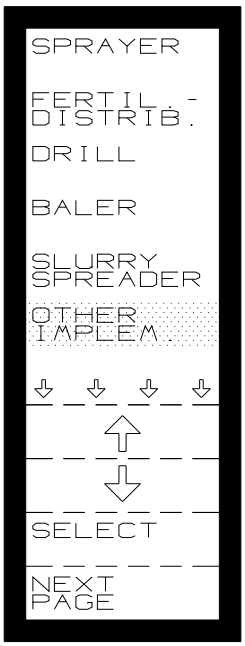
Other Implement



OTHER IMPLEMENT 8.2
OTHER IMPLEMENT OPERATION 8.3
DIESEL FUNCTIONS: 8.3
OTHER IMPLEMENT ENCODE 8.4
- HA LEFT 8.4
- WORKING WIDTH 8.4
- FORWARD SPEED SENSOR 8.5
- IMPLEMENT SENSOR 8.5
- METRE SWITCH 8.5
- WORK HOUR ON/OFF 8.5
- PTO SENSOR 8.6
- WARNINGS 8.6
- DATE - CLOCK: 8.6

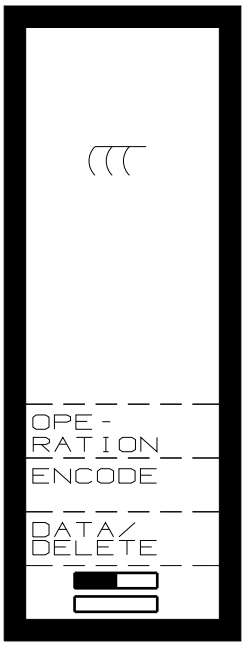
OTHER IMPLEMENT

Select **"OTHER IMPLEMENT"** from the main menu as follows:



Move the cursor using the arrow keys to **"OTHER IMPLEMENT"**, when this is done press the **"SELECT"** key.

The following is displayed:



It is now possible to select between the following functions:

OPERATION

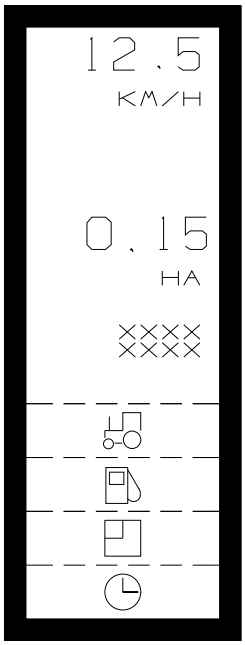
ENCODE

DATA/DELETE

TASK OPERATION.

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

OTHER IMPLEMENT OPERATION



FORWARD SPEED:

The primary function for other implement is forward speed.

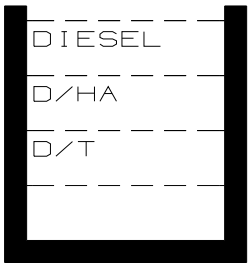
Forward speed is displayed in KPH with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar).

AREA MEASUREMENT:

The worked area is displayed in Ha. Area is displayed with 2 decimals from 0 to 99.99 ha. And thereafter with 1 decimal from 100 to 999.0 ha.

NOTE: a total counter for area can also be found in **"DATA/DELETE"**

DIESEL FUNCTIONS:



DIESEL: Fuel consumption in litres.

D/HA: Fuel consumption in litres per hectare.

D/T: Fuel consumption in litres per hour.

DIESEL: Diesel consumption since the last reset. This function works as a total counter and can be reset/deleted in **"DATA/DELETE"**.

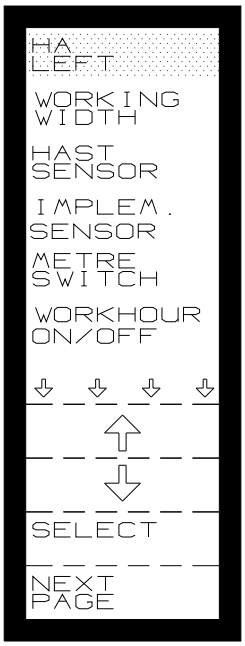
D/HA: The present diesel consumption in litres per hectare. Use the function to optimise work.

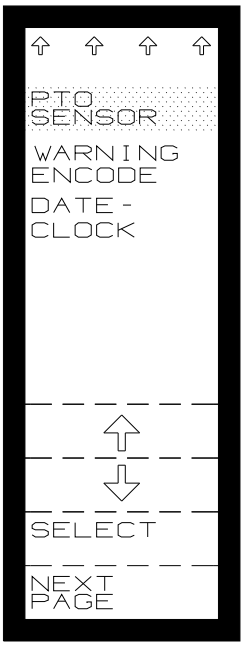
D/T: The present diesel consumption per hour. Use this function to optimise work.

OTHER IMPLEMENT ENCODE

This menu allows the operator to encode the various settings that are necessary for operation. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.





HA LEFT

Encode the size of the field to be spread here. END TIME, is calculated from this encodement.

WORKING WIDTH

The effective working width of the implement encoded in centimetres.

FORWARD SPEED SENSOR

The TeeJet 5000 V.4 other implement program gives the option of choosing between 3 different speed sensors (Wheel tractor, Wheel spreader, Radar).

WHEEL TRACTOR

The speed signal can come from a sensor fitted in the gear box, or on a drive shaft, or from a sensor fitted on a wheel, depending on the make and model of the tractor used.

RADAR

If the tractor is fitted with radar then select **"RADAR"** and forward speed will be measured from the radar. Radar and the number of pulses per metre will be displayed at the top of the screen.

IMPORTANT! Working in crops that are blowing in the wind or working in areas with surface water can affect the accuracy of the radar, we recommend using a speed sensor fitted to the tractor under these circumstances.

WHEEL IMPLEMENT

If the implement is fitted with a speed sensor, then press the **"WHEEL IMPLEMENT"** key. The TeeJet 5000 will now use this sensor for forward speed measurement.

IMPLEMENT SENSOR

The implement override sensor starts and stops area measurement.

The following options can be selected in **"OTHER IMPLEMENT"**:

1. **Lift**
2. **Implement**
3. **PTO** (if a sensor is fitted)

METRE SWITCH

Select whether the metre counter is started/stopped manually **"MANUAL"** or by the selected implement sensor **"IMPLEM. SENSOR"**.

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

PTO SENSOR

Encode the number of pulses per revolution for a PTO sensor if fitted. If the TeeJet PTO sensor kit is fitted (932-983) encode 1.

WARNINGS

The following warnings can be encoded here:

PTO: Warning **ON/OFF** and **MAX/MIN**-limits for the PTO sensor.

KM/H: Warning **ON/OFF** and **MAX/MIN**-limits for forward speed.

SLIP: Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip.

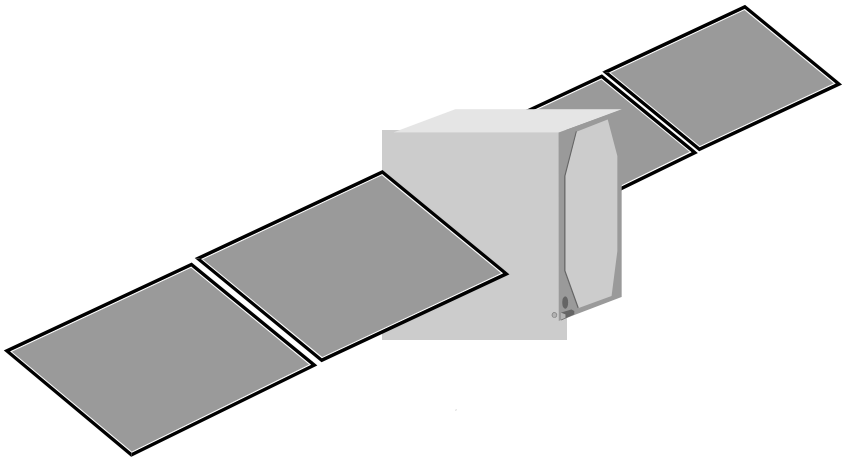
NOTE: It is recommended to switch all un-required warnings to **OFF**.

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.

DGPS



INTRODUCTION 9.2
SELECTING THE DGPS FUNCTIONS 9.3
DGPS STATUS 9.4
IMPORTANT 9.4
DGPS FUNCTIONS 9.5
- FIELD MEASUREMENT 9.5
- SOIL SAMPLING 9.7
- TASK MODE 9.8
- TEEJET 5000 DATALOG 9.8
- GPS OFFSET 9.9

WARNINGS 9.9
FILE MANAGEMENT 9.10

INTRODUCTION

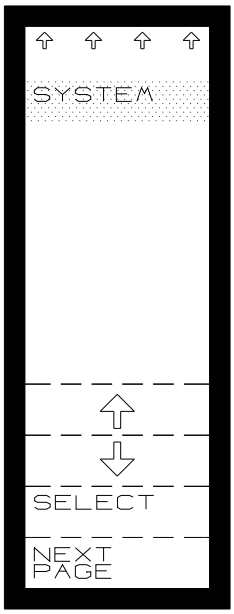
TeeJet 5000 with DGPS functions

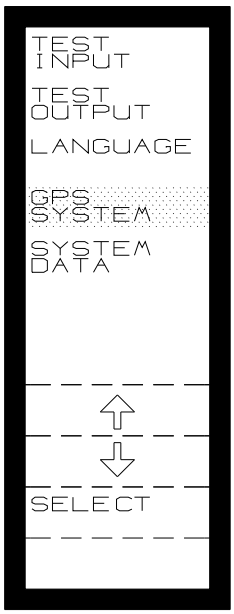
- Task function that controls the application rate for various implements depending on an application map made via a PC.
- Field boundary measurement plus island measurement, which can be transferred to a PC.
- Soil sampling with the position of each individual sample point.
- Data Logging, (recording) of what has actually happened in the field.
- Job computer. The TeeJet 5000 DGPS version can be used as a job computer in connection with another computer. (switch DGPS to “OFF” as described on the following page. The TeeJet 5000 will control the implement when application set points are received from the other computer via the serial connection.)

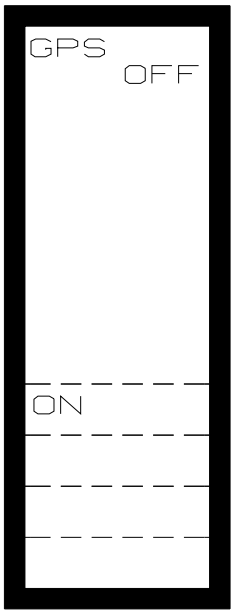
For further information regarding data transfer and mapping in general, please consult the user manual for the PC software used.

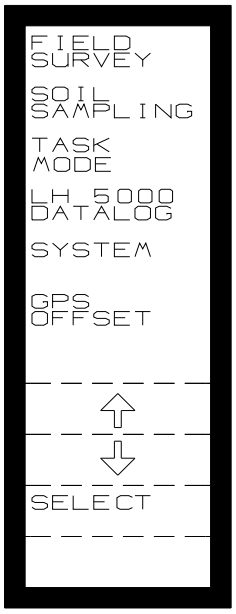
Note! The TeeJet 5000 must be connected to a TeeJet DGPS module and a TeeJet DataLink module plus be a DGPS version before the computer can work with the available DGPS functions.

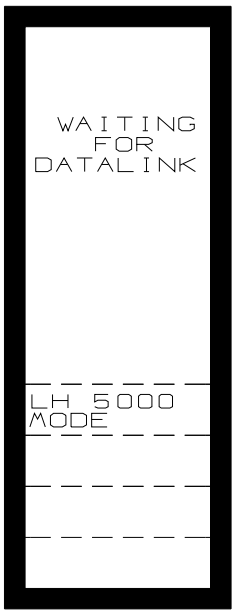
SELECTING THE DGPS FUNCTIONS











The DGPS menu is selected thus:

1. Using the arrow keys, move the cursor to **"SYSTEM"**. When this is done press the **"SELECT"** key.

2. Main menu
   - Selecting system

3. System menu
   - Selecting DGPS system

4. Pressing **"ON"** displays the available DGPS functions (main DGPS menu).

5. Returning to this screen at any time and pressing **"OFF"** will switch the DGPS functions off and the TeeJet 5000 will function as normal.

6. Moving the cursor with the arrow keys to the required function and pressing the **"SELECT"** key will display the function.

7. Each function will be described later in this section.

The picture to the left is displayed the next time the TeeJet 5000 is switched on.

Communication between the DataLink module and the TeeJet 5000 is being established.

If DGPS functions are not required then pressing the **"TeeJet 5000 MODE"** key will allow the TeeJet 5000 to operate as normal.

When DGPS functions are required again, following the procedure described from the top of this page will switch the DGPS functions on again.

DGPS STATUS

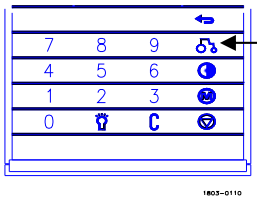
DG

eller

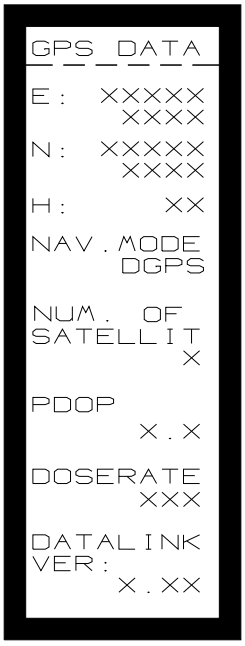
G

”DG” is displayed when satellite and reference signals are being received.

If positional signals are only being received from satellites then **”G”** will be displayed.



Pressing the STATUS key on the TeeJet 5000 displays the present DGPS Status



E: Latitude. The position is shown in degrees, minutes and ten thousandths of a minute.

N: Longitude. The position is shown in degrees, minutes and ten thousandths of a minute.

H: Altitude. The height in metres from sea level.

NAV. MODE: Tells the operator whether there is only signals from satellites (GPS) or if reference signals are also being received. (DGPS).

NO. OF SATELLITES: The number of satellites that signals are being received from.

PDOP: The distance between the satellites that signals are being received from.

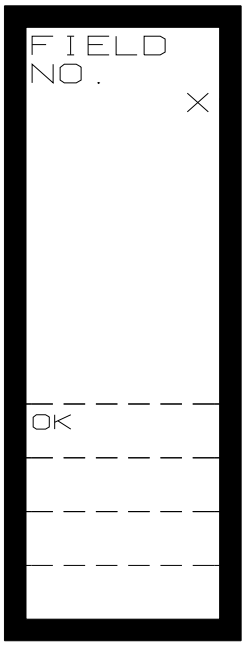
DOSERATE: The application rate decided by the application map.

IMPORTANT

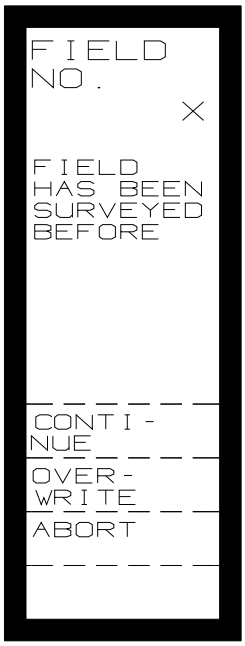
<u>Before</u> the data card is removed from the DataLink module after executing any of the following DGPS functions, press the “RETURN” key until the main DGPS menu is displayed and switch the power off to the DataLink module.

DGPS FUNCTIONS

FIELD MEASUREMENT



Select the field to be surveyed by entering the field number using the numerical keypad. Press “OK” thereafter.



The picture to the left is displayed if the field has been measured before.

CONTINUE: Continue with the previously surveyed field.

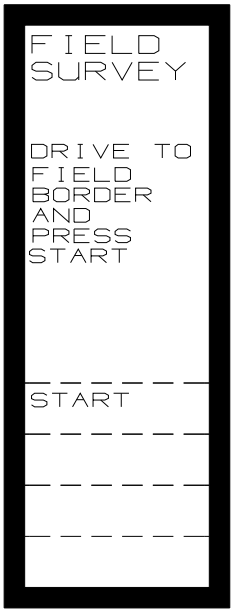
OVERWRITE: The existing field measurements are overwritten.

ABORT: Abort the present survey.

CONTINUE: Pressing this key continues the field survey.

OVERWRITE: Pressing this key overwrites the previously measured field and starts the field from new.

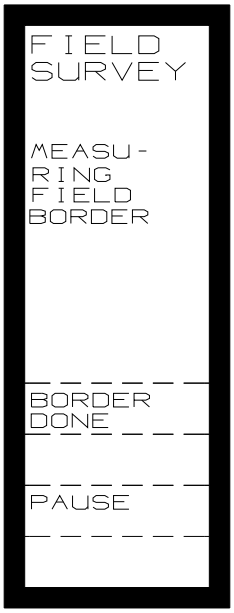
ABORT: Pressing this key returns the screen to SELECT DGPS FUNCTIONS.

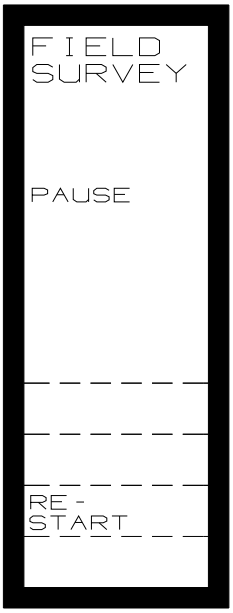


The picture to the left is displayed once the field has been selected.

Drive to the field boundary start point and press **"START"**.

START: Start field boundary measurement.



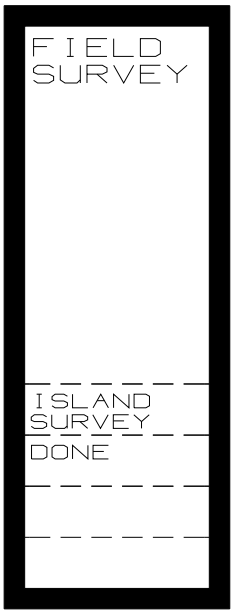


Drive around the field boundary.

Pressing the **"PAUSE"** key allows for a break in the field boundary measurement.

Pressing **"RE-START"** resumes boundary measurement.

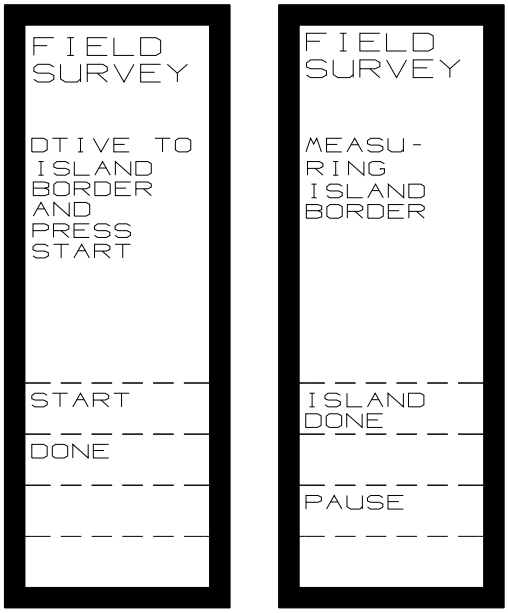
When the boundary is finished, pressing **"BORDER DONE"** displays the following picture:



If there are any islands in the field, i.e. lime pits, trees, etc. These can be measured and added to the field survey.

ISLAND SURVEY: Selects the island measurement function. If there are islands in the field then pressing **"ISLAND SURVEY"** will display the island measurement screen.

DONE: If there are no islands in the filed, pressing **"DONE"** returns the screen to the main DGPS menu.



If island survey has been selected the picture to the left will be displayed.

START: Start island measurement.

DONE: When there are no more islands.

ISLAND DONE: When the island is measured.

PAUSE: If a break in island measurement is required.

START: Drive to the start of the island and press **"START"**, drive around the island.

DONE: If there are no more islands to be measured, press **"DONE"**.

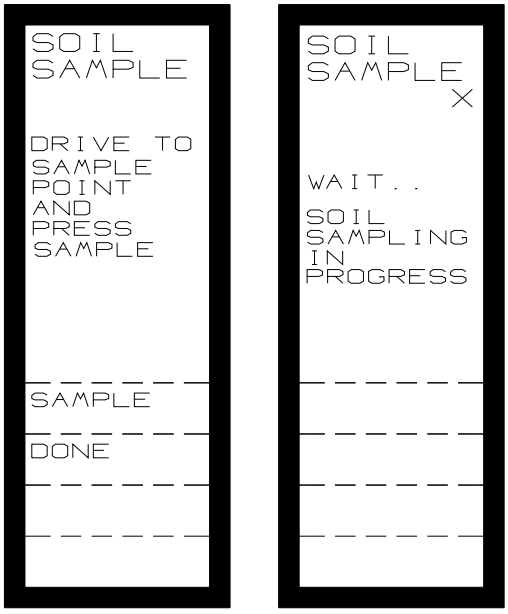
ISLAND DONE: When the island is finished, press this key.

PAUSE: Pressing this key allows for a break in island measurement. Drive back to the position that island measurement was stopped before pressing **"RE-START"**.

It is possible to measure more islands by driving to the island boundary and pressing the **"START"** key.

SOIL SAMPLING

Select SOIL SAMPLING from the main DGPS menu.

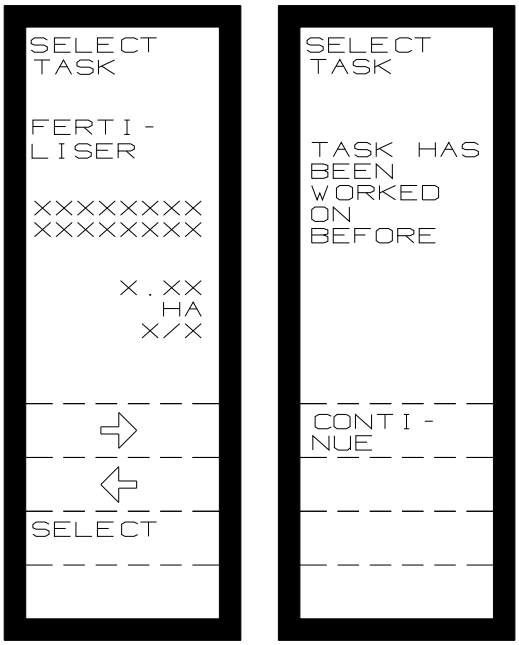


Select which field the samples are to be taken from, the field number can be altered using the numerical keypad. The picture to the left is displayed.

Drive to the first sample point and press **"SAMPLE"**.
After a short wait it is possible to drive to the next sample point.
When no more samples are required press the **" DONE"** key.

TASK MODE

Select TASK MODE from the main DGPS menu.



Select the task for the field to be worked. It is possible to page through the tasks available on the PCMCIA data card by using the horizontal arrow keys.

The task shown is “FERTILISER”.
The task information is determined by the PC program used to create the task (application map) “XXXXXXXX”.
The area to be worked “XX.XX HA”
The task number out of the number of available tasks “X/XX”.
If the task was been worked on before a small asterisk is shown on the bottom left hand side of the screen “*”.
Press **“SELECT”** when the correct task has been chosen.
The TeeJet 5000 will notify the operator if the task has been worked on before, it is possible to continue with the task by pressing the **“CONTINUE”** key or cancel by pressing the **“RETURN”** key.
When a task has been selected the TeeJet 5000 will change to the normal operating screen for the correct implement.

NOTE!

Two new function keys will appear in the operation screen for the implement. One of the keys allows the operator to switch between DGPS and manual application rate. The other key displays the required application rate according to the present task (application map).

If there is any doubt about whether the DGPS application is correct or not, we recommend using MANUAL APPLICATION.

TEEJET 5000 DATALOG

When this function is selected, the TeeJet 5000 changes to the normal TeeJet5000 implement selection screen. Operation of the computer is now as for a standard TeeJet 5000 as described in each individual implement’s section in this manual. In TeeJet 5000 DATALOG MODE all alterations to the application rate will be recorded together with the position onto the PCMCIA card thus enabling the user to create a map of what has actually happened in the field.

GPS OFFSET

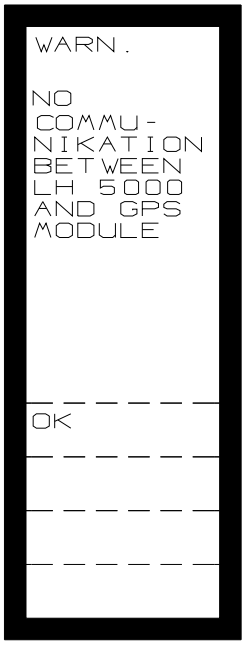
Only displayed if the DataLink module being used has been delivered from TeeJet Technologies after 1/7-2000. Please contact your local dealer for further information.

The distance in metres between the DGPS antenna and the position at which the, e.g. fertiliser is placed.

If the implement is behind the DGPS antenna then a **+GPS OFFSET** should be encoded. If the implement is in front of the DGPS antenna then a **-GPS OFFSET** should be encoded.

WARNINGS

The following warnings can be displayed.

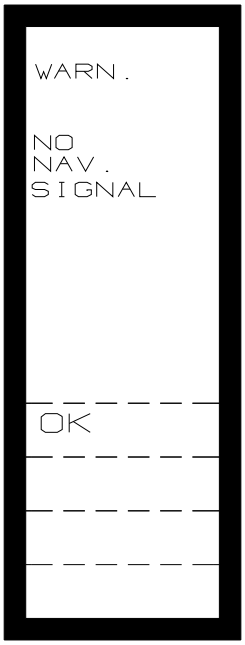


This alarm is given when there is no communication between the TeeJet 5000 and the DataLink module.

The warning can be given by switching the DataLink module off or that the PCMCIA data card was NOT inserted before the DataLink module was started.

Pressing the **"OK"** key changes the screen to the main DGPS menu.

If there are still communication problems between the TeeJet 5000 and the DataLink module the warning will be given at regular intervals.



This warning is given when no position signals are received.

Pressing the **"OK"** key returns the screen to the operation screen.

A warning is given again when a positional signal is received again.

FILE MANAGEMENT

To avoid over filling the PCMCIA data card, we recommend removing processed data on the card at regular intervals. Some PC programs clear the card up each time a task is transferred to the card. However, not all PC programs have this function.

There are two types of files generated by the PC program or the TeeJet 5000/DataLink module:

File type	Description	
***.inp**	**Input file:**	Files with this suffix are created by the TeeJet 5000/ DataLink module with field boundary measurement, soil sampling, data logging and the automatic data logging that takes place whenever a task from the data card is carried out.
***.out**	**Output file:**	Files with this suffix are created by the PC program and contain task information.

These files are placed in the **"DATEN"** directory on the PCMCIA data card and can be copied, deleted, etc. in a file management program such as "Windows Explorer".

Please refer to the original documentation for the file management program.

There are other files and directories on the PCMCIA data card that are essential for correct operation of the DataLink module. These ***must not*** be altered or removed from the data card.

Fitting instructions

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SPARE PARTS 12.5
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FITTING THE AREA OVERRIDE SENSOR 12.11
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CONNECTIONS IN THE JUNCTION BOX 12.13
- MULTI-CABLE FROM THE TEEJET 5000 ..... 12.13
- MULTI-CABLE FROM THE BREAK-AWAY PLUG 12.13
- DIESEL FLOWMETER 12.13
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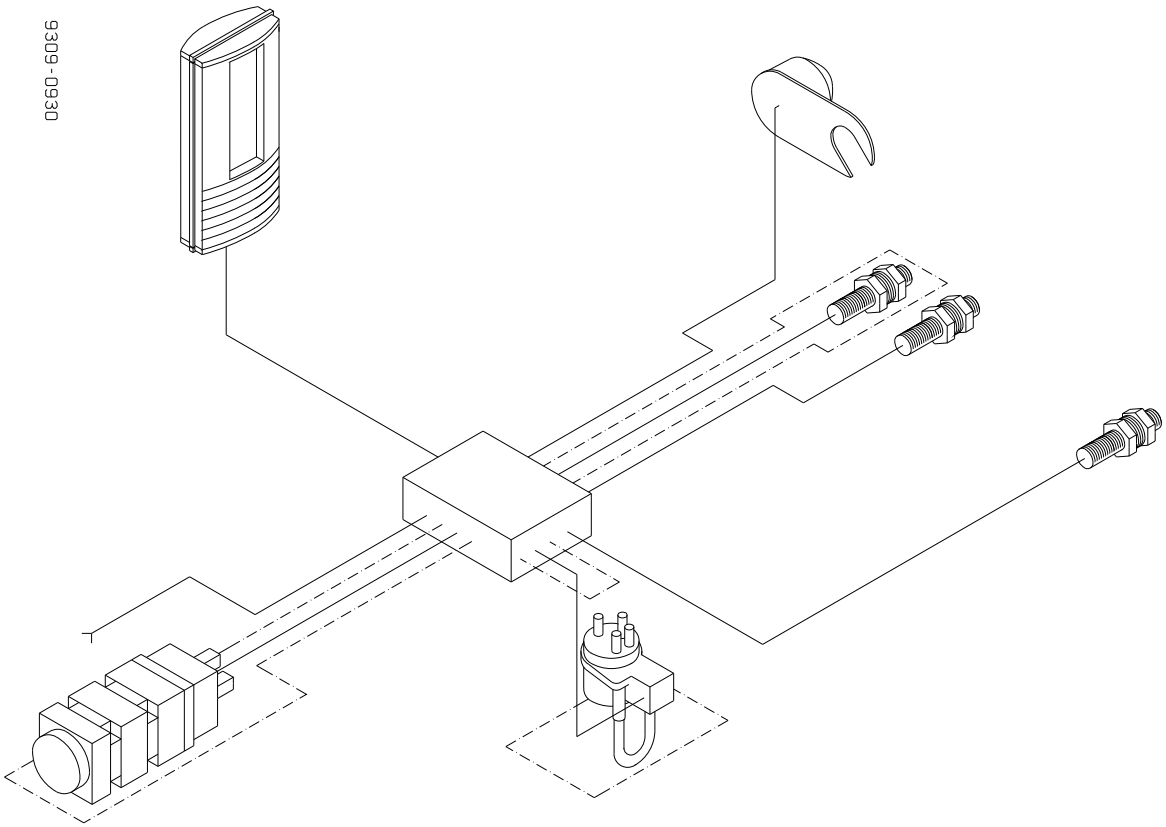
FITTING INSTRUCTIONS TEEJET 5000 VER. 4

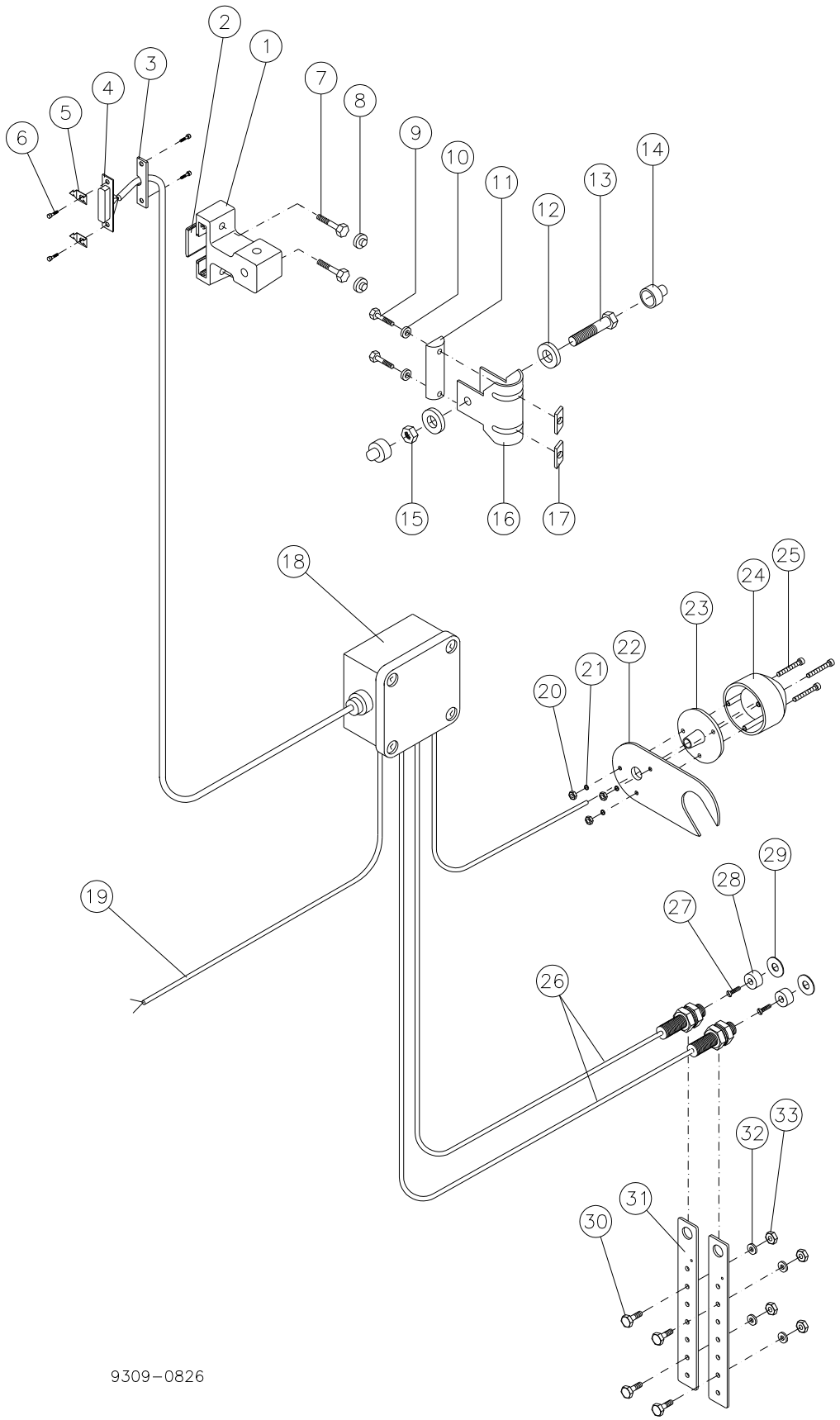
The basic **TeeJet 5000** (computer + fitting kit) includes the computer, mounting bracket, cables, junction box, 2 sensors, break-away plug, and various parts required for fitting. This system can be expanded with various parts for the tractor, i.e. PTO sensor for measuring PTO shaft speed, diesel flowmeter for fuel consumption, and radar for exact forward speed measurement.



The system can be expanded with kits for almost all implements depending upon requirements. Fitting kits for the most common manufacturers and implement types are available as standard kits.

Fitting instructions for the various additions are delivered with the kits.

GENERAL OVERVIEW

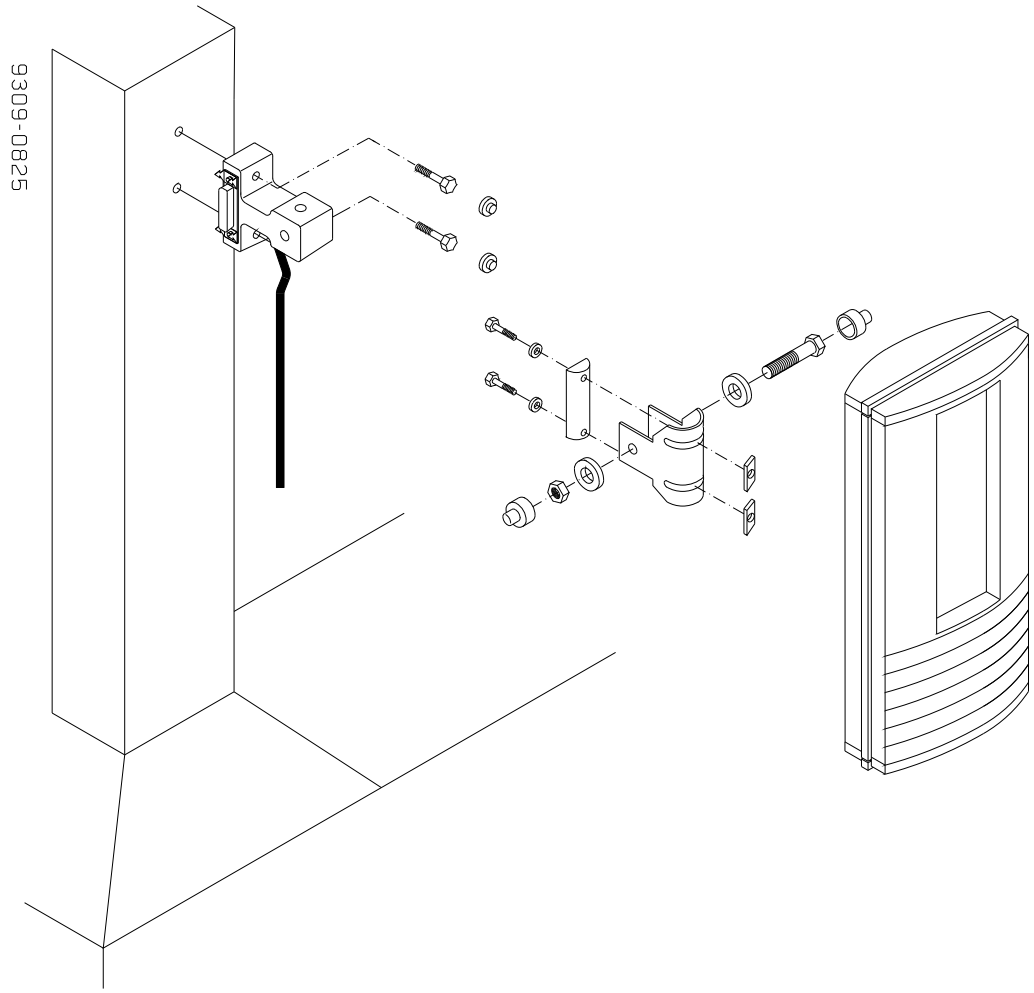


SPARE PARTS

Pos. No.	TeeJet NR.	RESERVEDELE	ERSATZTEILE	SPARE PARTS	PIECES DETACHEES
1	880-140	Fod profil	Halter	Holder	Support
2	865-171	Blændplade	Blendplatte	Cover plate	Couvercle
3	865-170	Blændplade	Blendplatte	Cover plate	Couvercle
4	198-025	Kabel m/stik	Kabel mit Stecker	Cable with plug	Câble a fiches
5	178-507	Lås f/stik	Verschluβ für Stecker	Lock for plug	Blocage pour fiche
6	821-211	Skrue 2.9 x 9.5	Schraube 2.9 x 9.5	Screw 2.9 x 9.5	Vis 2.9 x 9.5
7	827-630	Skrue M6 x 30	Schraube M6 x 30	Screw M6 x 30	Vis M6 x 30
8	861-108	Møtrikbeskytter	Mutterschoner	Nut protector	Protecteur d' écrou
9	816-520	Skrue M5 x 20	Schraube M5 x 20	Screw M5 x 20	Vis M5 x 20
10	830-005	Skive M5	Scheibe M5	Washer M5	Rondelle M5
11	865-165	Støtteskinne	Stützschiene	Supporting plate	Support
12	830-931	Skive M8	Scheibe M8	Washer M8	Rondelle M8
13	811-845	Skrue M8 x 45	Schraube M8 x 45	Screw M8 x 45	Vis M8 x 45
14	861-110	Møtrikbeskytter	Mutterschoner	Nut protector	Protecteur d'écrou
15	858-800	Møtrik M8 m/lås	Mutter M8 mit verschluβ	Nut M8 with lock	Ecrou bloquant M8
16	843-175	Bøjle	Bügel	Bracket	Garniture
17	844-205	Trapezmøtrik	Trapezmutter	Trapeze nut	Ecrou trapézoidale
18	866-012	Plastboks	Kunststofbox	Plastic box	Boitier en plastique
18a	900-499	Samleprint	Sammelplatine	Junction print	Circuit imprimé
18b	166-632	Sikring	Sicherung	Fuse	Fusible
19	192-150	Strømkabel	Powerkabel	Power cable	Câble d'alimentation
20	865-500	Møtrik M5	Mutter M5	Nut M5	Ecrou M5
21	831-510	Skive M5 fjeder	Scheibe M5 Feder	Spring washer M5	Rondelle M5
22	842-521	Beslag	Beschlag	Bracket	Garniture
23	861-600	Pakning	Packung	Packing	Joint
24	178-600	Anhængerstik	Gerätekupplungs-stecker	Trailer plug	Prise de remorque
25	811-535	Skrue M5 x 35	Schraube M5 x 35	Screw M5 x 35	Vis M5 x 35
26	900-982	2 ledet føler	2-adr. Fühler	2 core sensor	Capteur à 2 conducteurs
27	827-412	Skrue M4 x 16	Schraube M4 x 16	Screw M4 x 16	Vis M4 x 16
28	775-803	Magnet	Magnet	Magnet	Aimant
29	830-420	Skive M4	Scheibe M4	Washer M4	Rondelle M4
30	811-620	Skrue M6 x 20	Schraube M6 x 20	Screw M6 x 20	Vis M6 x 20
31	842-516	Beslag	Beschlag	Bracket	Garniture
32	831-612	Skive M6 fjeder	Scheibe M6 Feder	Spring washer M6	Rondelle M6
33	856-600	Møtrik M6	Mutter M6	Nut M6	Ecrou M6

FITTING THE COMPUTER

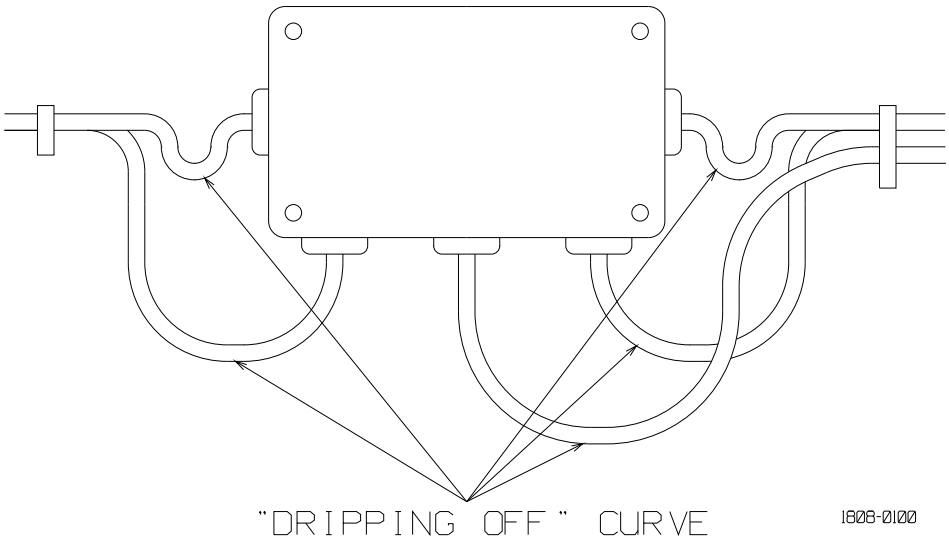
Fit the computer within reach and sight of the driver during operation, preferably to the right of the operator.



Ensure that the cable from the mounting bracket is as protected as possible when routing the cable.

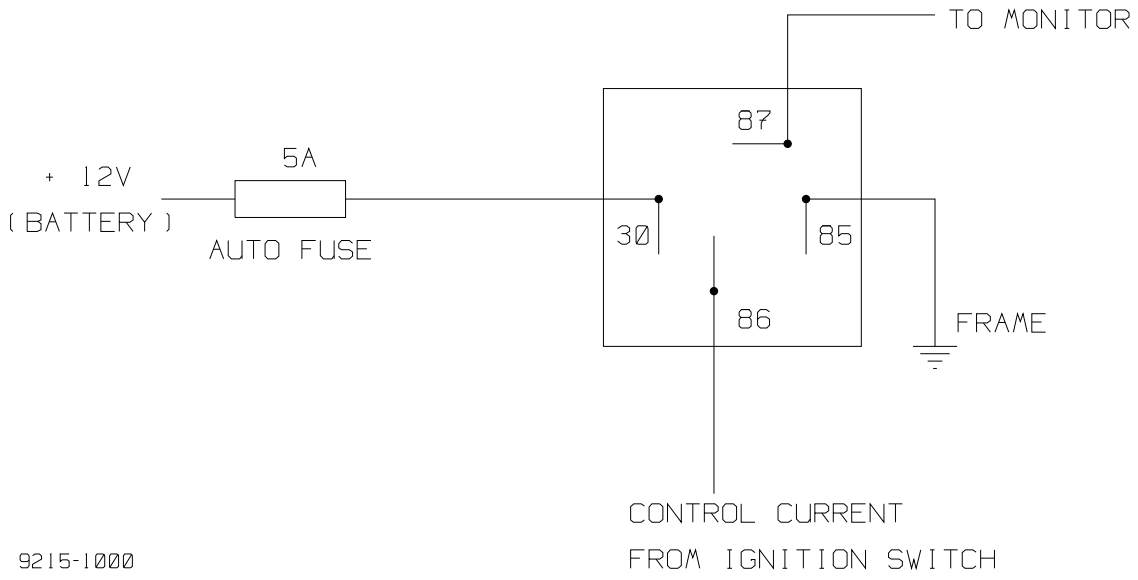
FITTING THE JUNCTION BOX

Fit the junction box under the instrument panel or on the underside of the cab. When fitting the junction box outside the cab, moisture must be taken into consideration. The cable holes in the rubber caps should not be cut any larger than the cable and the cable should be long enough to allow for **"DRIP OFF POINTS"** before entering the junction box (*see diagram below*).



POWER SUPPLY

The **TeeJet 5000** system can, with additions, have a power demand of 4 Amps, when working with control equipment (electromagnetic clutches, motors, etc.). We recommend in such circumstances that the power supply is drawn directly from the battery, but as the computer **must** switch off when the ignition is switched off, draw the power through a relay controlled via the ignition (see diagram).



Place the relay under the instrument panel or a similarly protected position. The fuse should be positioned by the battery to ensure protection of the whole power cable.

FITTING THE FORWARD SPEED SENSOR

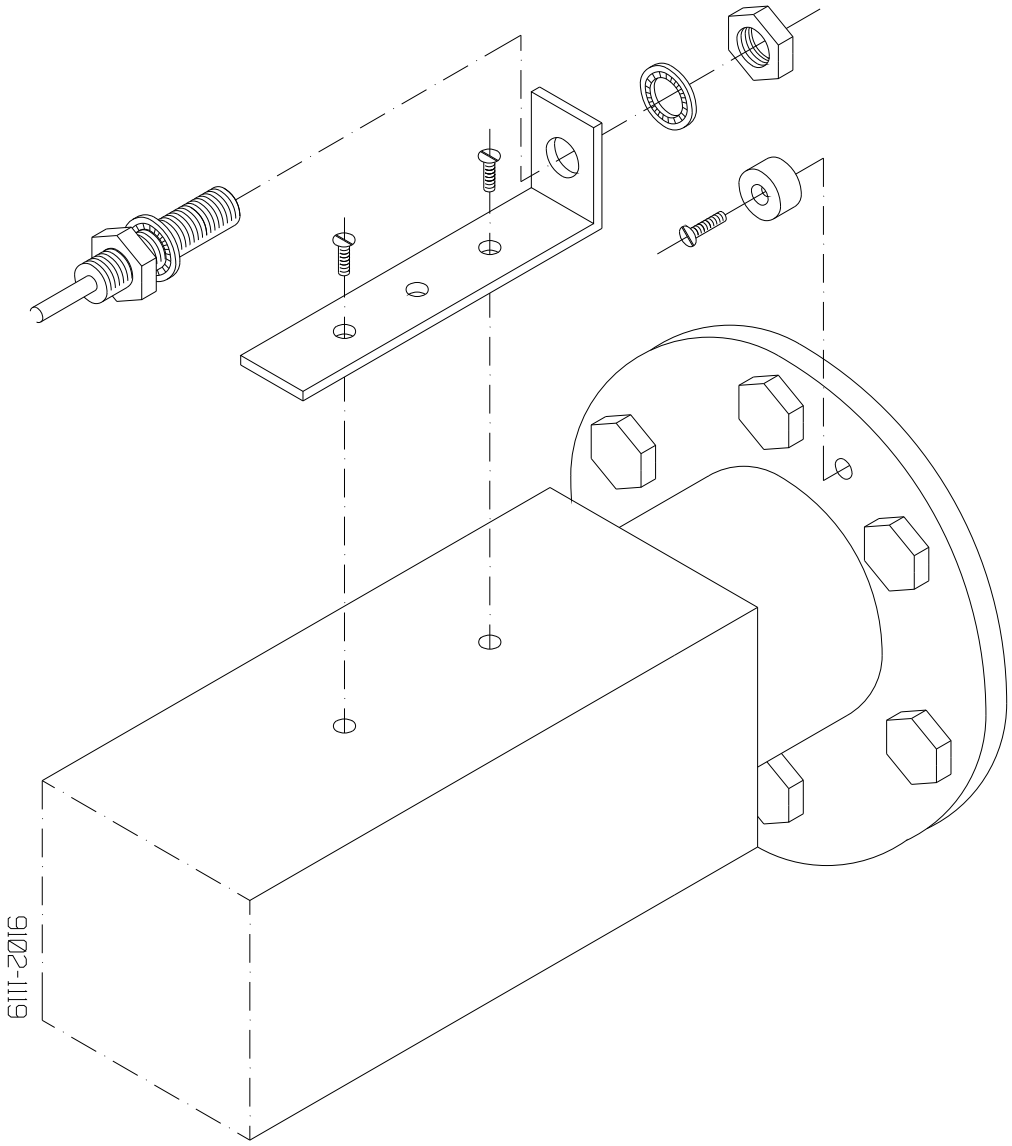
The **TeeJet 5000** system can receive speed signals from 3 different speed sensors, a wheel sensor on the tractor, a wheel sensor on the implement, and radar.

Fitting the supplied wheel sensor is recommended on the rear right-hand wheel of the tractor. See the diagram below.

The distance between the magnet and the speed sensor should not exceed 5mm. If the wheel circumference exceeds 250 cm. then 2 magnets must be fitted. When using automatic application control the wheel circumference should ***not*** exceed 100 cm if this is the case then more magnets should be added.

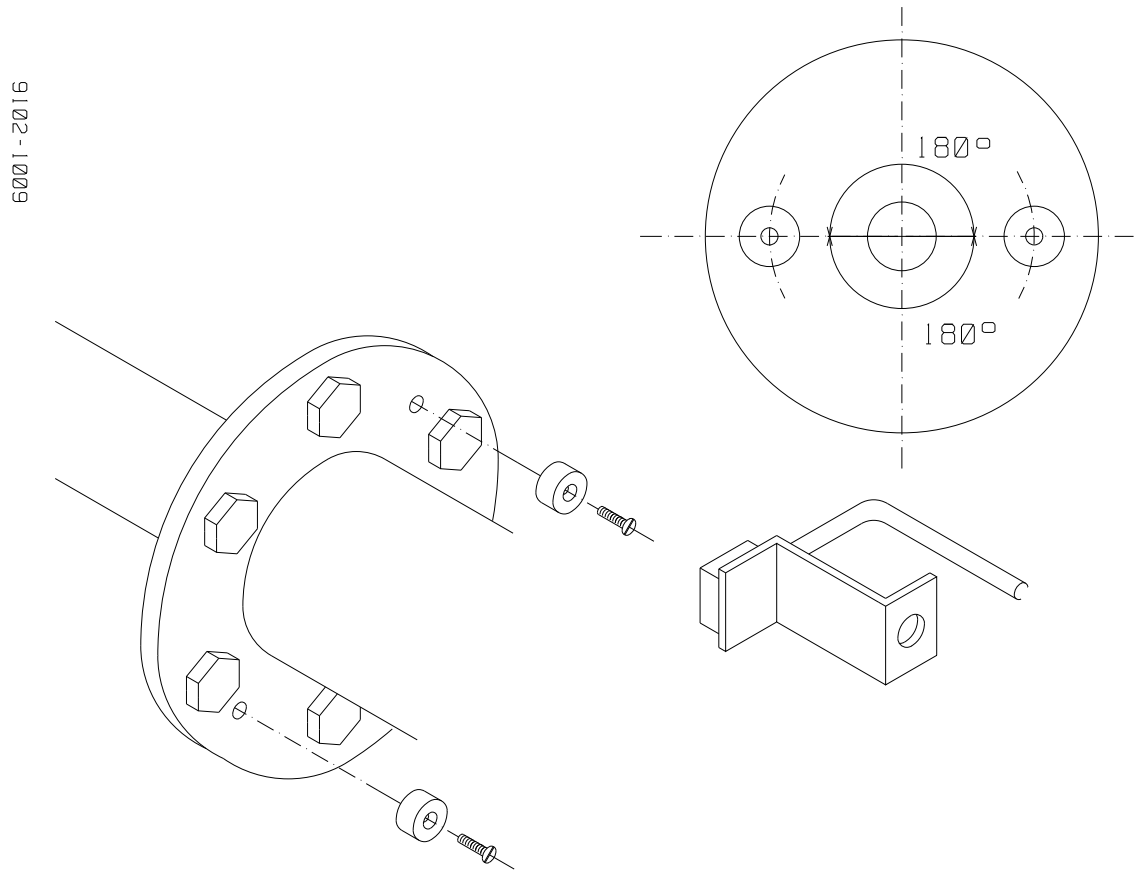
NOTE! The magnets ***must*** be fitted with equal distance between each magnet; otherwise the forward speed will ***"spring".***

The magnets can be fitted, i.e. on the wheel bolts.



It is preferable, where it is possible, to fit a speed sensor on the drive shaft of 4 wheel drive tractors. This requires a different sensor than the one supplied as standard with the fitting kit. This possibility is shown in the following diagram.

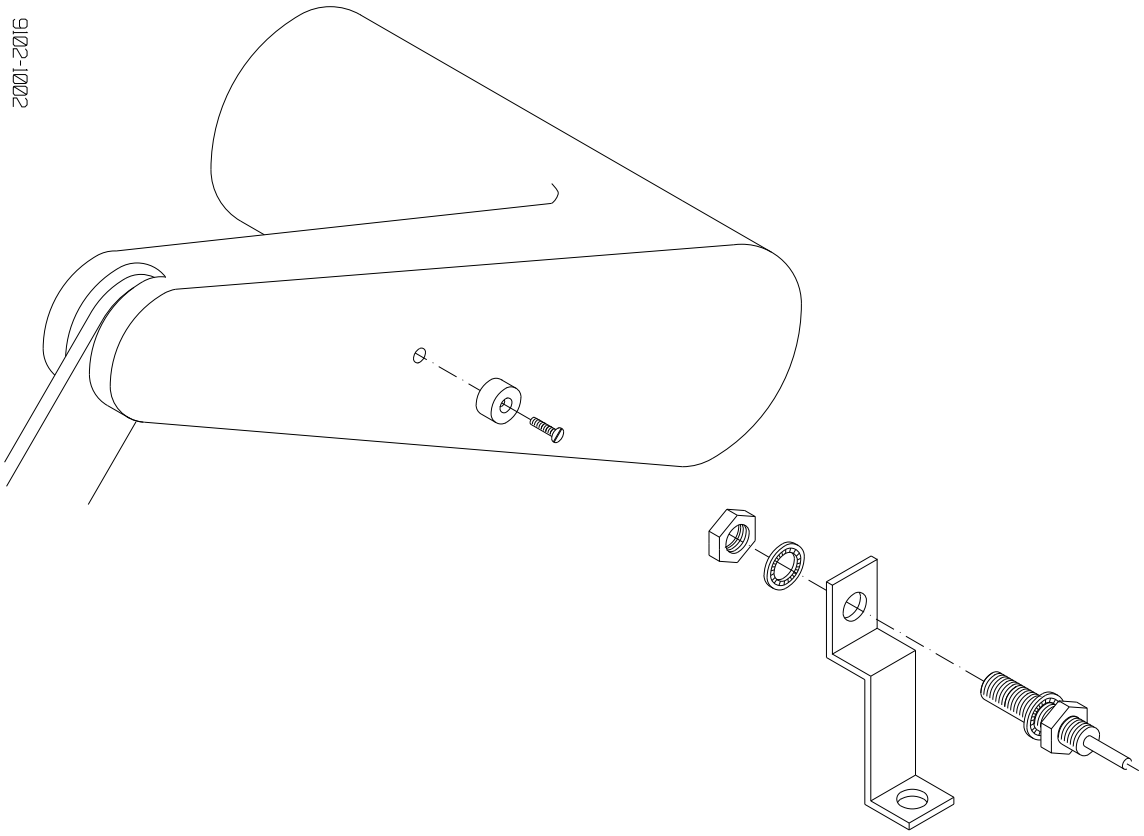
If the “drive shaft solution” is required, then a **“bi-polar”** sensor must be used. This sensor is different than the supplied sensor and should be ordered separately.



The distance between the sensor and the magnets must be 2-3 mm when using this type of sensor, and the 2 magnets must have opposite poles facing the sensor, i.e. one magnet with the yellow spot facing the sensor and the other magnet facing the opposite direction.

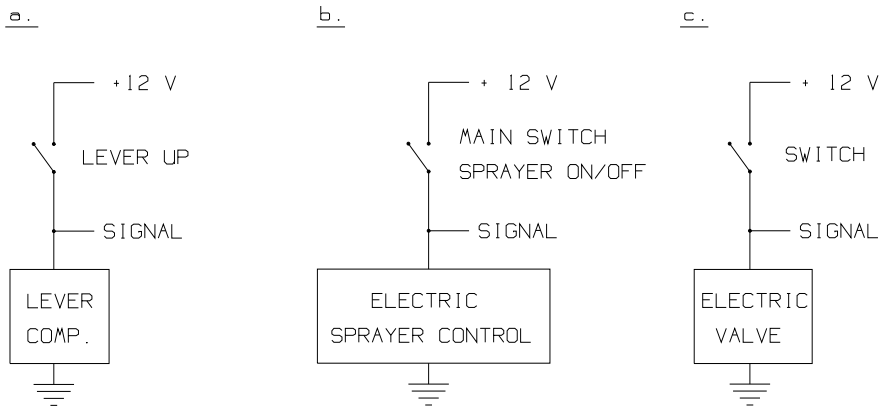
FITTING THE AREA OVERRIDE SENSOR

The area override sensor stops the area counter when the implement is not in operation. Most implements use the three-point linkage and are raised/lowered, so the most universal solution is to fit the area override sensor on the lift arms.



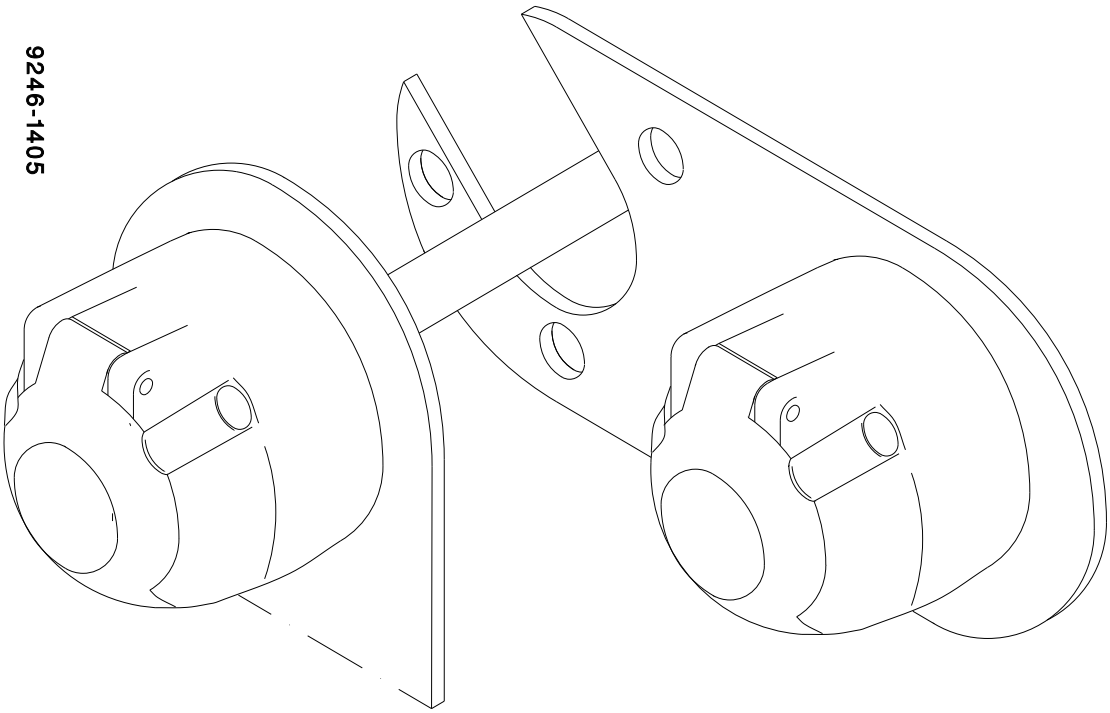
The sensor can be fitted in other positions (PTO handle, hydraulic cylinder handles, etc.) as long as there is a mechanical movement of min. 50-mm. The distance between the sensor and the magnet must not exceed 5 mm.

An electrical signal from, i.e. electrically controlled lift arms, sprayer switch box, etc. can be used as an area override sensor. The signal **must** change to **0V (ground)** when the area counter is to be stopped.



FITTING THE BREAK-AWAY PLUG

The supplied breakaway plug with cable should be fitted next to the existing trailer plug, as shown below. Lift arm movement must be considered when fitting the breakaway plug.



CABLE ROUTING

Lead the cables from the various sensors and breakaway plug together with existing cables, hydraulic pipes, etc. to the junction box.

Attach the cables with the supplied cable binders. Be careful not to route the cables near moving parts, sharp edges, and areas with high temperatures, etc.

CONNECTIONS IN THE JUNCTION BOX

A label is supplied in the fitting kit, **attach this label to the lid of the junction box** to ensure that the connections are always available when/if the system is added to at a future date.

1

TeeJet 5000		
1	Grey	Trail 1
2	Red	Trail 2
3	Brown	Mot. 1+
4	Yellow	Trail 4
5	Blue	Implement
6	Pink	Diesel
7	Green	Trail 7
8	Violet	PTO
9	Black	Radar
10	Grey/Pink	Wheel
11	White	+12V
12	Blue/Red White/Green	0V

2

Break-away plug		
1	White	Trail 1
2	Brown	Trail 2
3	Green	Mot. 1+
4	Yellow	Trail 4
5	Grey	0 V
6	Pink	+ 12V
7	Blue	Trail 7
8	Red	+ 12V
9	Green	Radar
10	Black Blue	0 V

FUSE 4A

FUSE 4A

3

1	Blue	Diesel	
2	Brown	0 V	
3	Blue	Implement	
4	Brown	0 V	
5	Blue	+ 12 V	
6	Black	PTO	
7	Brown	0 V	
8		+ 12 V	
9	Blue	Wheel	
10	Brown	0 V	
11	Blue	+ 12 V	Power
12	Brown	0 V	

TeeJet Technologies

MULTI-CABLE FROM THE TEEJET 5000

Connect this cable to connecting block 1. Connect the individual wires according to the colour code on the label.

MULTI-CABLE FROM THE BREAK-AWAY PLUG

Connect to connecting block 2 (1-7) according to the colour code on the label.

DIESEL FLOWMETER

Connect to connecting block 3 (1-2) according to the colour code on the label.

RADAR

Connect to connecting block 2 (8-10) according to the colour code on the label.

POWER SUPPLY

Connect to connecting block 3 (11-12) according to the colour code on the label.

IMPLEMENT SENSOR

Connect to connecting block 3 (3-4) according to the colour code on the label.

PTO - SENSOR (RPM)

Connect to connecting block 3 (5-7) according to the colour code on the label.

SPEED SENSOR

Connect to connecting block 3 (8-10) according to the colour code on the label.

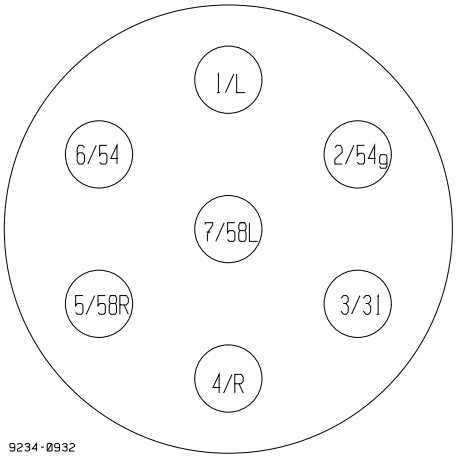
BREAK-AWAY PLUG CONNECTIONS

As there are only 7 pins in the breakaway plug and there many different possible sensor connections, each pin in the plug has a different function depending on which implement is being used.

The following describes how each sensor should be connected for each individual implement.

If one of **TeeJet Technologies** complete implement kits is used, then the correct connections are taken into consideration and the sensors need only be connected as shown in the fitting instructions for the implement.

Breakaway plug for the implement seen from the fitting side.



SPRAYER

SPRAYER		
SENSOR	**WIRE COLOUR**	**PIN NUMBER**
FLOWMETER	BLUE	5
	BROWN	2
	BLACK	6
SPEED SENSOR	BLUE	4
	BROWN	5
IMPLEMENT SENSOR	BLUE	7
	BROWN	5
PRESSURE SENSOR	BLUE	6
	BROWN	5
	BLACK	1

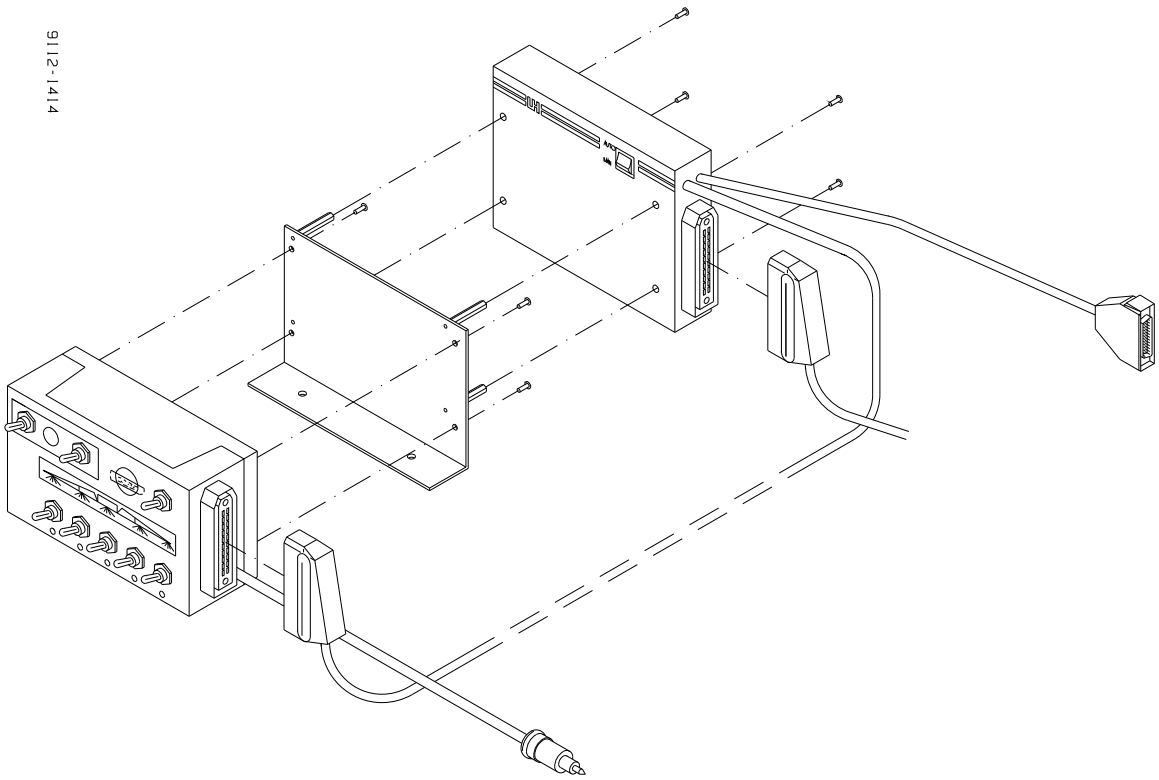
Motor control and **boom compensation** can **not** be connected through the breakaway plug, but should be connected to the system **A** plug.

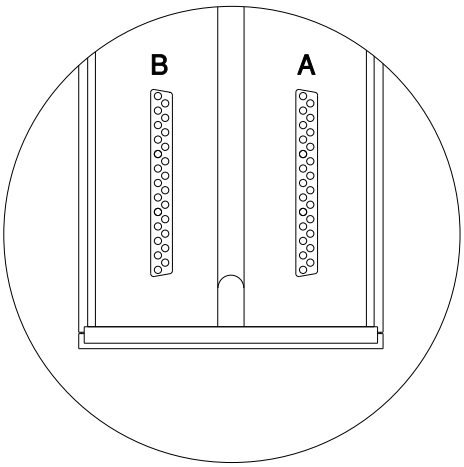
Complete kits are available for a number of sprayers, please contact TeeJet AGRO.

Implement sensor kit	**TeeJet no.** 930-982
Speed sensor kit	**TeeJet no.** 930-982
Flowmeter 20-200 l/min.	**TeeJet no.** 902-986
Break away plug (male)	**TeeJet no.** 178-601

Fitting kits for flowmeters should be ordered separately to fit the sprayer in question.

The following shows a tailor made kit for automatic application control and boom compensation (Hardi EC manifold).





FERTILISER DISTRIBUTOR

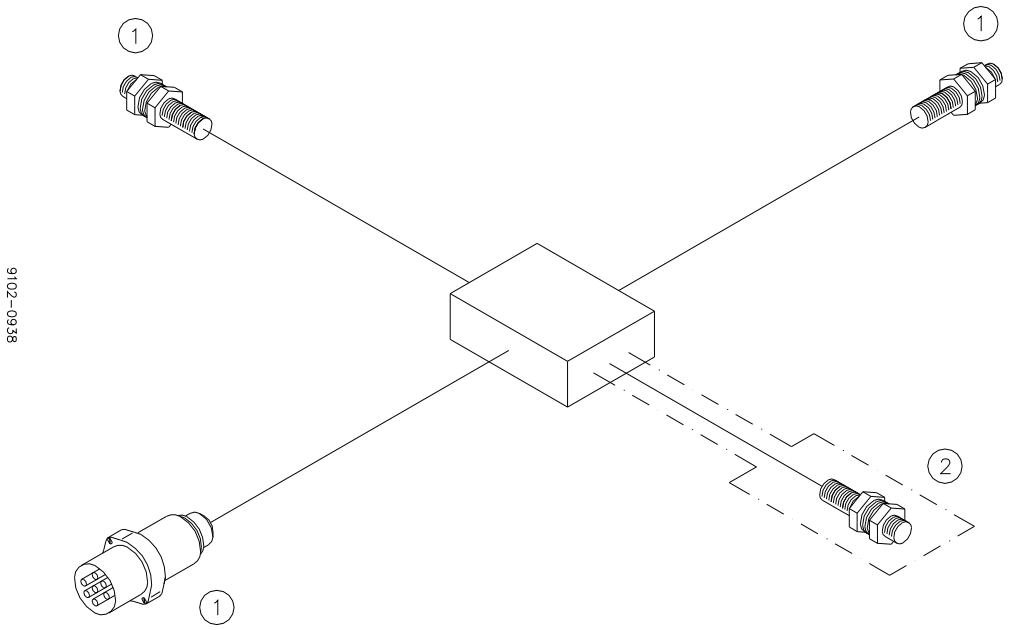
MONITORING

FERTILISER DISTRIBUTOR		
SENSOR	**WIRE COLOUR**	**PIN NUMBER**
RPM SENSOR 1	BLUE	6
	BROWN	5
	BLACK	1
RPM SENSOR 2 OR WEIGHING MODULE	BLUE	6
	BROWN	5
	BLACK	2
SPEED SENSOR	BLUE	4
	BROWN	5
IMPLEMENT SENSOR	BLUE	7
	BROWN	5

Using the standard kit for fertiliser distributors from **TeeJet Technologies** gives a better and neater installation, which is prepared for additions (see the diagram below).

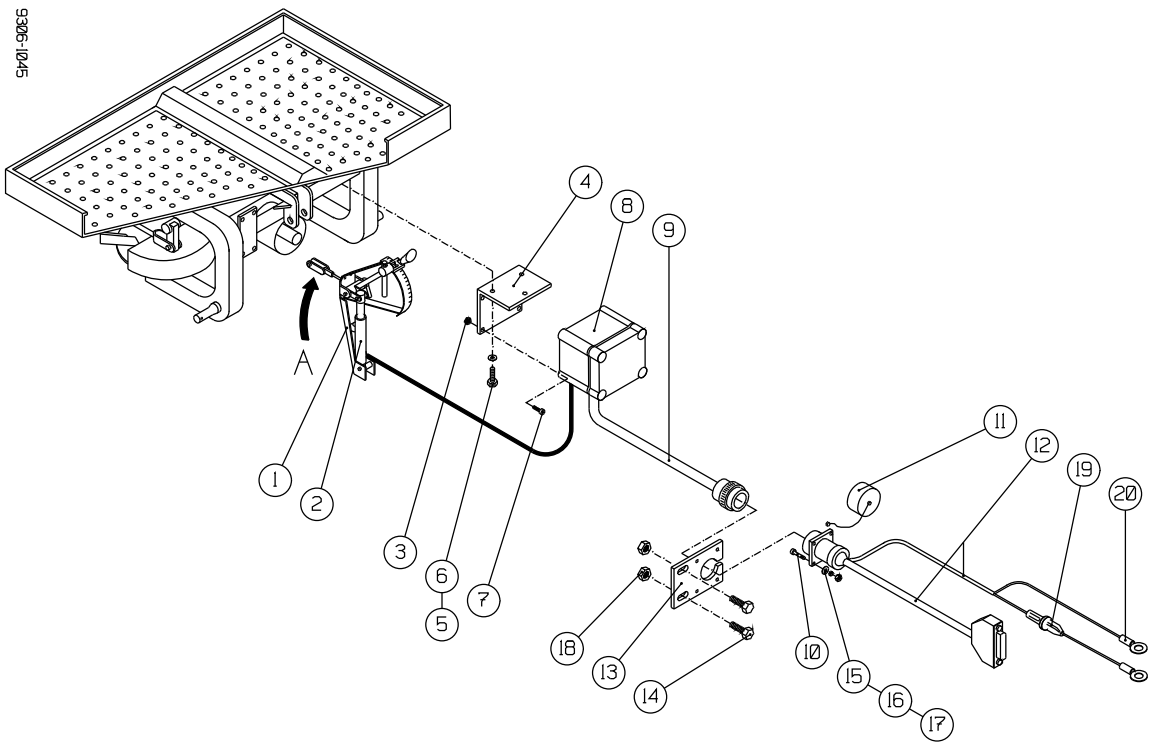
1: Wheel sensor / implement sensor **930-982**

2: Shaft speed sensor kit **930-983**

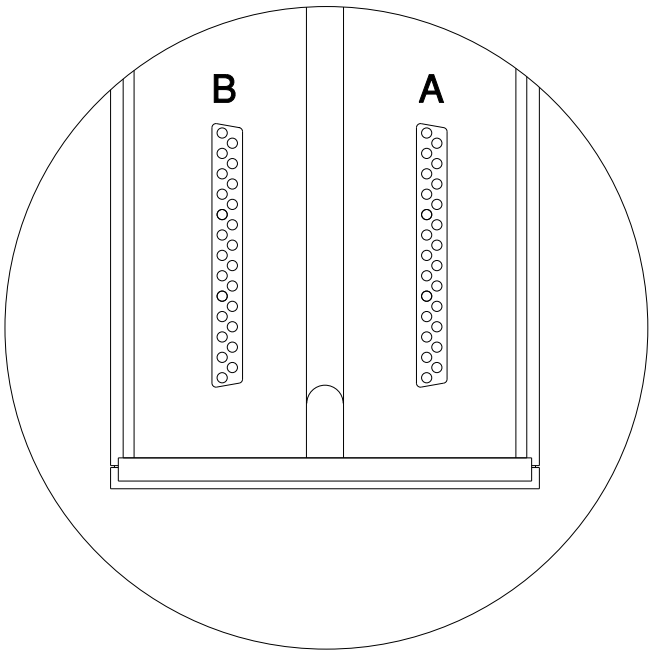

1
1
9102-0938
2
1

APPLICATION CONTROL

The following is an example of a complete kit for automatic application control.



The automatic application control kits for fertiliser distributors do not use the 7 pin breakaway plug, but use the system **B** plug.

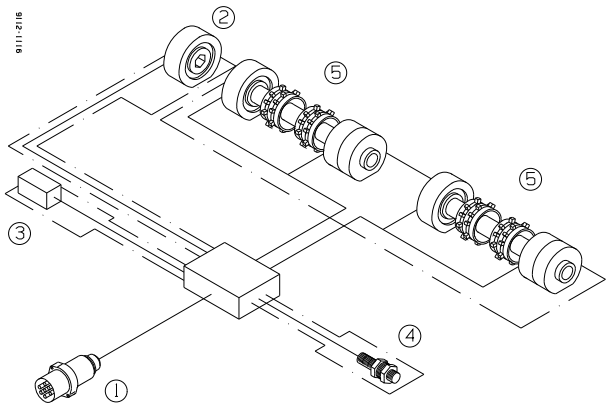


SEED DRILL

SEED DRILL		
SENSOR	**WIRE COLOUR**	**PIN NUMBER**
RPM SENSOR ON THE DRILL SHAFT (2 CORE)	BLUE	1
	BROWN	5
RPM SENSOR ON THE DRILL SHAFT (3 CORE)	BLUE	6
	BROWN	5
	BLACK	1
RPM SENSOR ON CLUTCH	BLUE	2
	BROWN	5
EMPTY HOPPER LEVEL SENSOR	BLUE	6
	BROWN	5
	BLACK	4
IMPLEMENT SENSOR	BLUE	7
	BROWN	5

Tramline control cannot be connected directly to the breakaway plug. The TeeJet 5000 fitting kit for seed drill **must** be used.

If tramline control is required the fitting kit displayed below should be used. This kit is also prepared for additions.



1: **TeeJet 5000** seed drill kit. Includes junction box and breakaway plug with cable. **TeeJet no.** 921-180

2: RPM sensor for the drill shaft 2-core **TeeJet no.** 905-152

3: Empty hopper level sensor **TeeJet no.** 904-152

4: Implement sensor **TeeJet no.** 930-982

Clutch kits with RPM sensors must be ordered to fit the drill shaft on the seed drill.

5: Clutch kit for 17-mm hex. axle **TeeJet no.** 903-152

5: Clutch kit for 20 mm round axle **TeeJet no.** 906-152

BALER

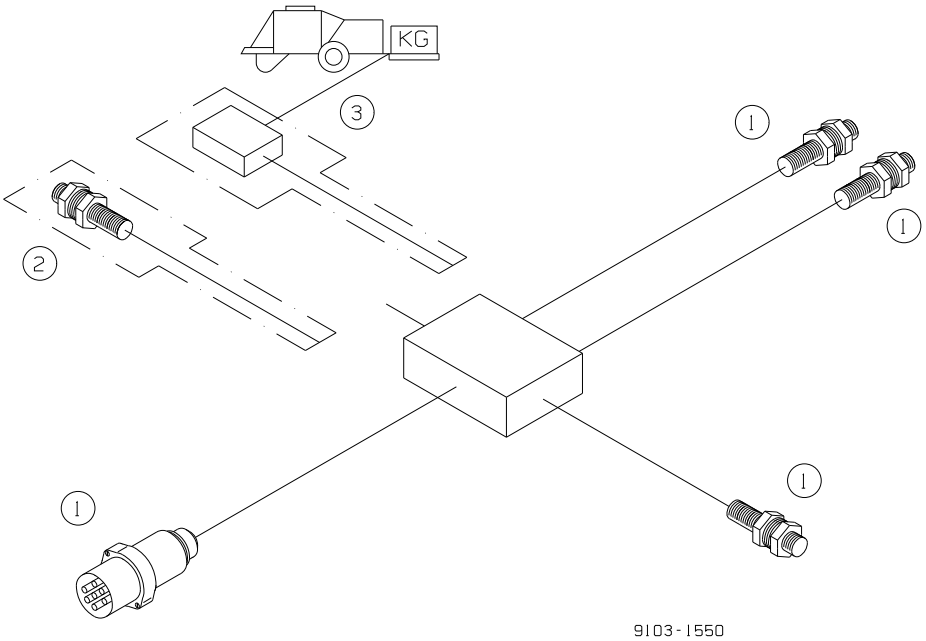
BALER		
SENSOR	**WIRE COLOUR**	**PIN NUMBER**
BALE COUNTER SENSOR	Blue	1
	Brown	5
RPM SENSOR 3	BLUE	6
OR	BROWN	5
WEIGHING MODULE	BLACK	2
RPM SENSOR 2	BLUE	6
	BROWN	5
	BLACK	4
RPM SENSOR 1	BLUE	6
	BROWN	5
	BLACK	7

Using the standard kit for balers from **TeeJet Technologies** gives a better and neater installation, which is prepared for additions.

1: TeeJet 5000 baler monitoring kit. Includes junction box, breakaway plug with cable, 2-RPM sensors and a bale counter. **TeeJet no.** 910-180

2: RPM sensor kit **TeeJet no.** 930-983

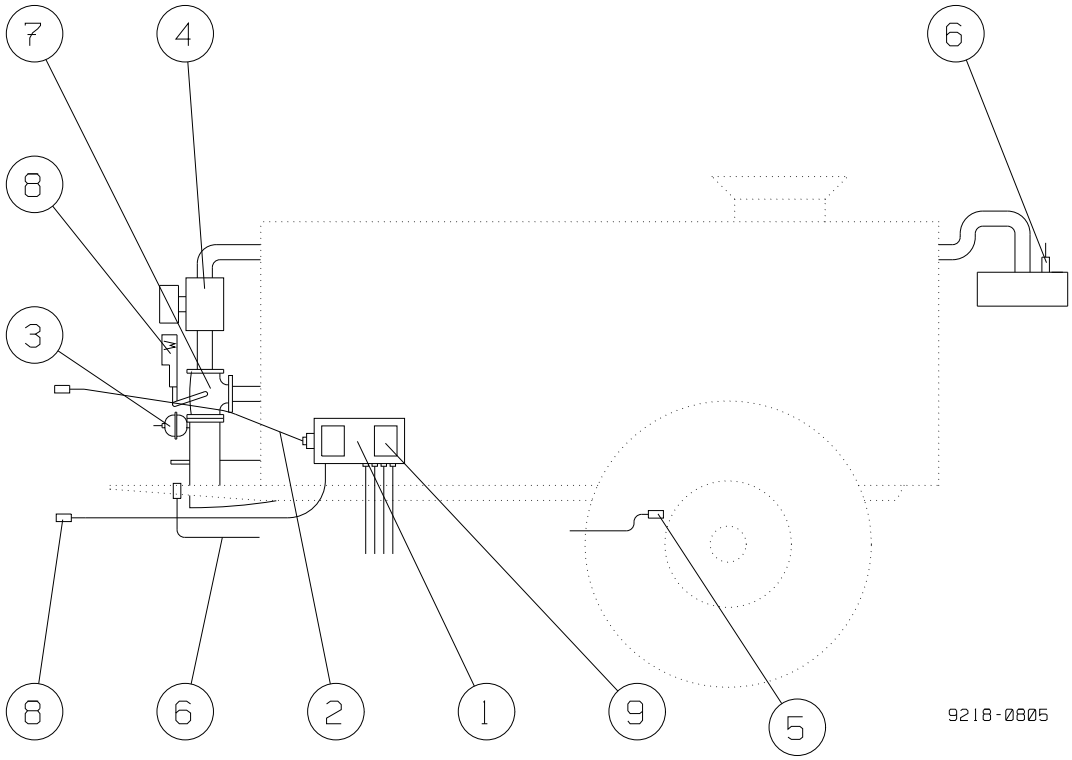
3: Bale weighing module to be ordered depending on baler make and model.



SLURRY SPREADER

SLURRY SPREADER		
SENSOR	WIRE COLOUR	PIN NUMBER
RPM SENSOR 1	BLUE	6
	BROWN	5
	BLACK	1
FLOWMETER	+12V	6
	0V	5
	SIGNAL	2
WHEEL SENSOR	BLUE	4
	BROWN	5
IMPLEMENT SENSOR	BLUE	7
	BROWN	5

The following shows an example of equipment for a slurry spreader:



1. Junction box
2. Connecting cable
3. Pressure sensor
4. Flowmeter
5. Speed sensor
6. RPM sensor
7. Reg. Valve
8. Actuator
9. Motor control

TeeJet 5000 Monitor

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